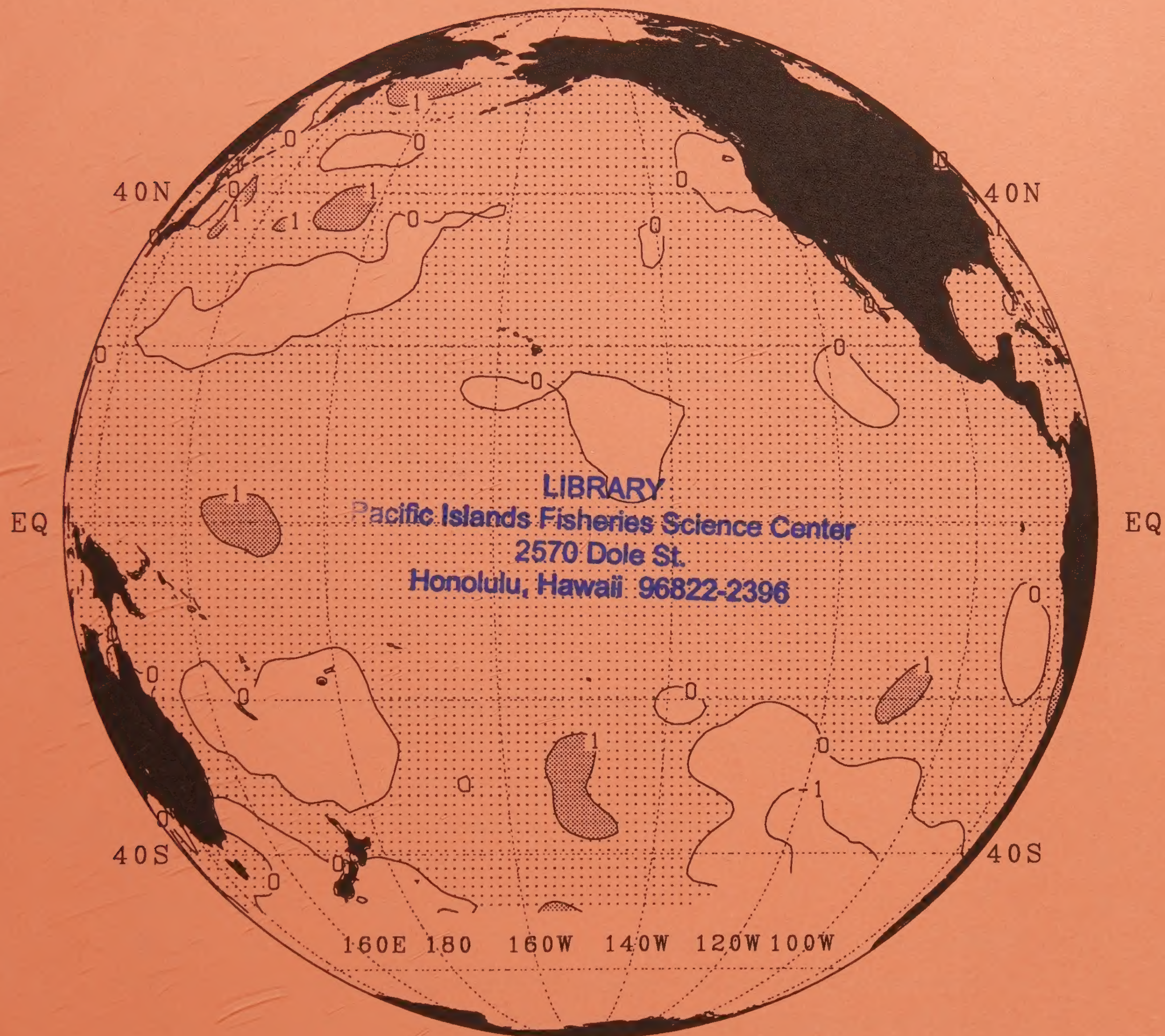
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気象庁海洋月報

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Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成15年11月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
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Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、2003 年 11 月の太平洋の月平均海面水温偏差図です。

陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for November 2003 in the Pacific Ocean.

Areas of positive anomalies are shaded.

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海況の特徴（２００３年１１月）

日本近海の海況

海面水温は、九州の南から紀伊半島にかけての海域と、本州の東155°E付近、及び日本海北部で平年より1℃以上高かった。一方、三陸沖には-1℃を超える負偏差が見られた（第４図）。

黒潮は、上旬は九州・四国から紀伊半島にかけて接岸し、中・下旬は九州南東で離岸、四国から紀伊半島にかけて接岸した後、東海沖を東に流れていた。これより東では、上・中旬は33.5°N、138°E付近で、下旬は33.5°N、139°E付近で北東に向きを変え、三宅島付近を通過して房総半島沖を北東に流れていた（第９図）。

太平洋の海況

太平洋赤道域の海面水温は、全域で平年より高く、特に165°E付近では+1℃を超える正偏差が見られた。

北太平洋の海面水温は、35°N、175°E付近とベーリング海で+1℃を超える正偏差が見られた（第１７図）。

Highlights November 2003

Seas adjacent to Japan

SSTs were more than 1℃ above normal in the seas from south of Kyushu to the Kii Peninsula and along 155°E east of Honshu. SSTs were more than 1℃ below normal in the seas off Sanriku (Fig. 4).

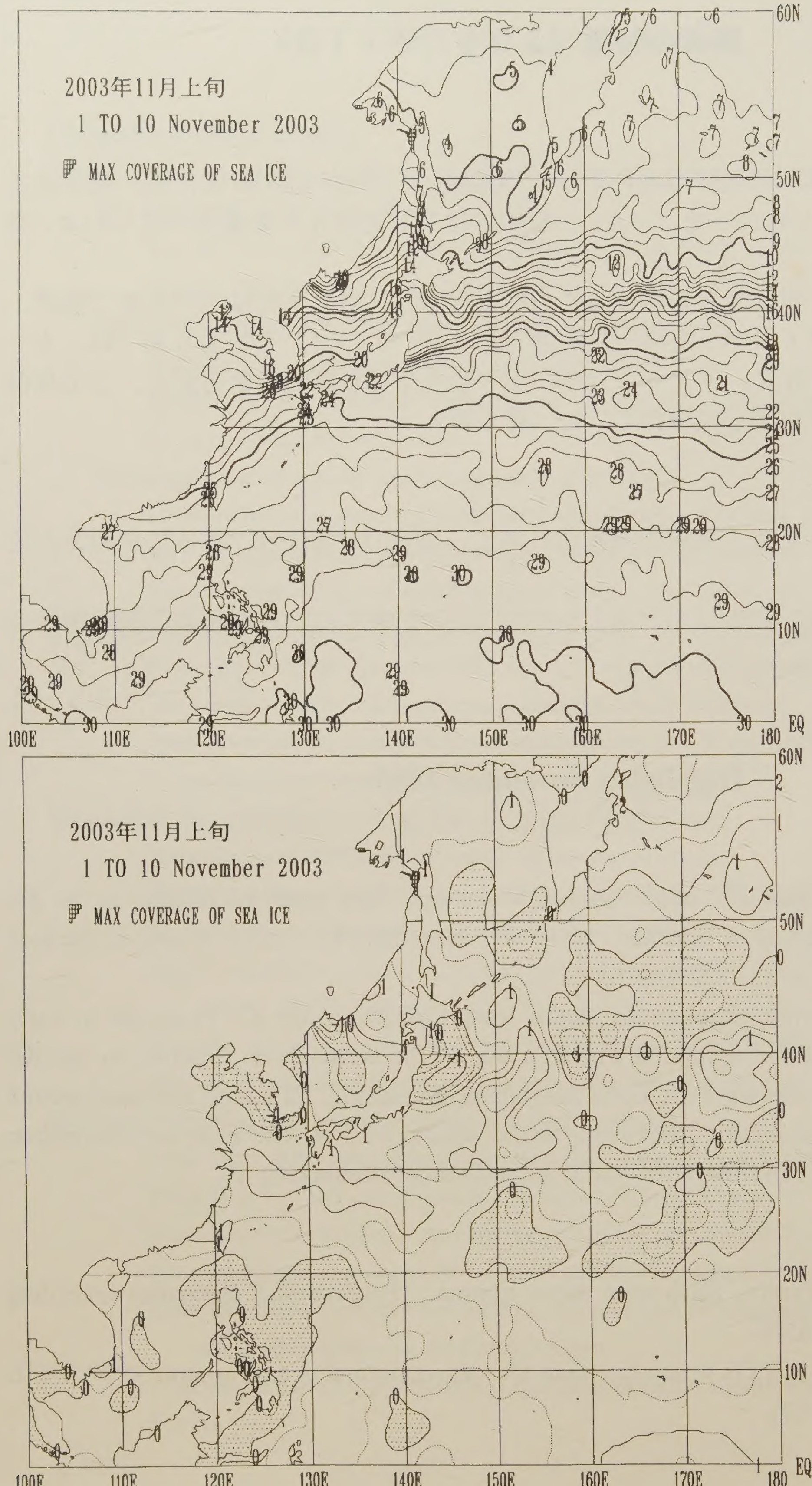
The Kuroshio flowed close to the coasts from Kyushu to the Kii Peninsula in early November. In the rest of the month, it flowed close to the coasts from Shikoku to the Kii Peninsula. And it flowed eastward off Tokai throughout the month. It turned NE-ward around 33.5°N, 138°E in early and middle November, turned around 33.5°N, 139°E in late November, passed near Miyake Island, and flowed NE-ward off the Boso Peninsula (Fig. 9).

Pacific Ocean

In the equatorial Pacific, SSTs were above normal. Positive SST anomalies exceeding +1℃ were found around 165°E.

In the North Pacific, SSTs were more than 1℃ above normal in seas around 35°N, 175°E and in the Bering Sea (Fig. 17).

Ten-day mean SST & Anomalies



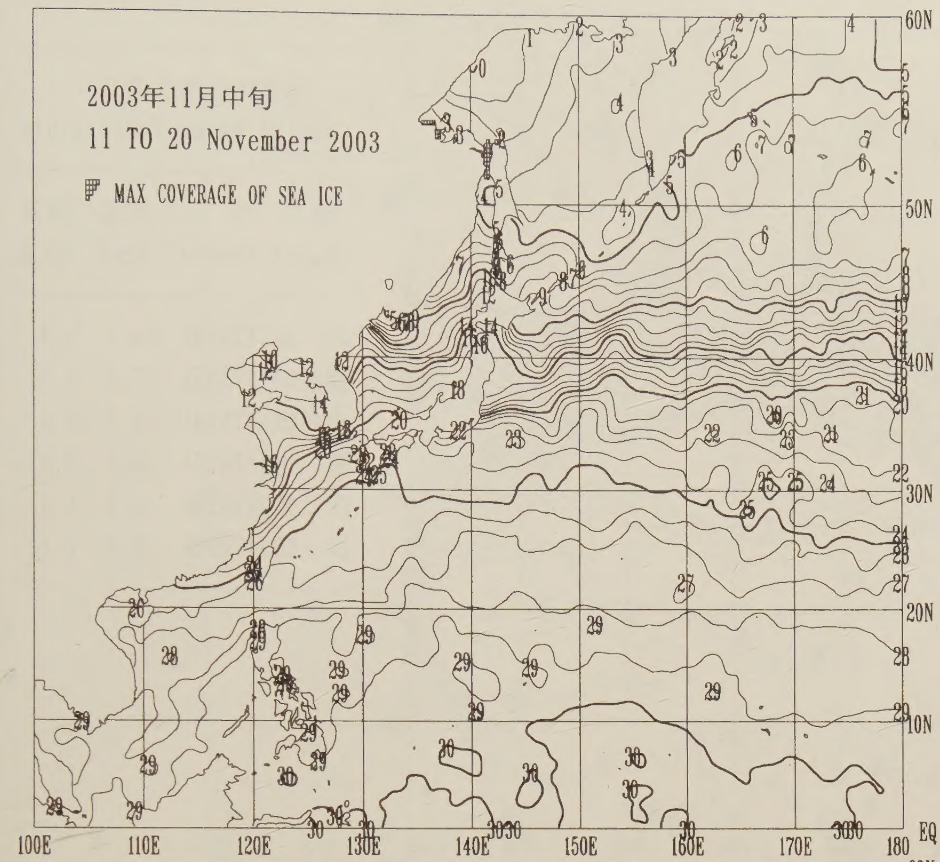
旬平均沿岸水温 (℃)
Coastal Water Temperature

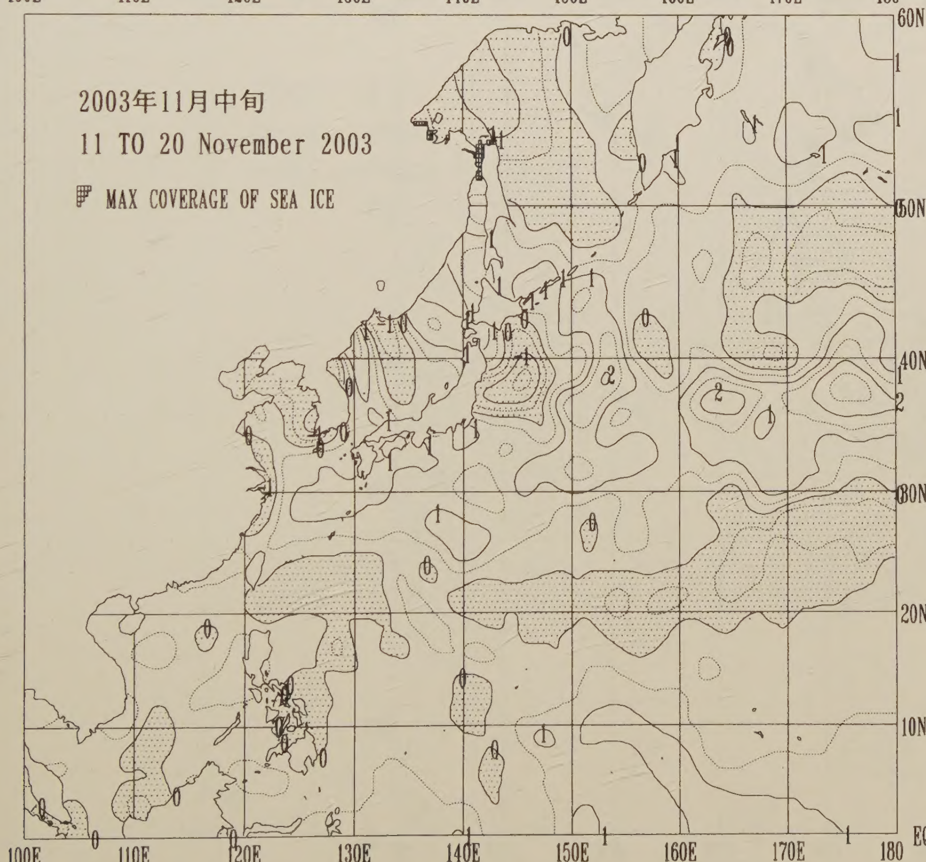
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣 (47918)	26.2	0.9
御前崎 (47655)	20.2	1.3
小名浜 (47598)	16.8	-0.7
宮　古 (47585)	16.3	0.3
江　差 (47428)	15.2	1.2
浜　田 (47755)	21.2	1.7

第1図 北西太平洋旬平均海面水温図 (上) 及び偏差図 (下) (2003年11月上旬)

Fig. 1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in November 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies





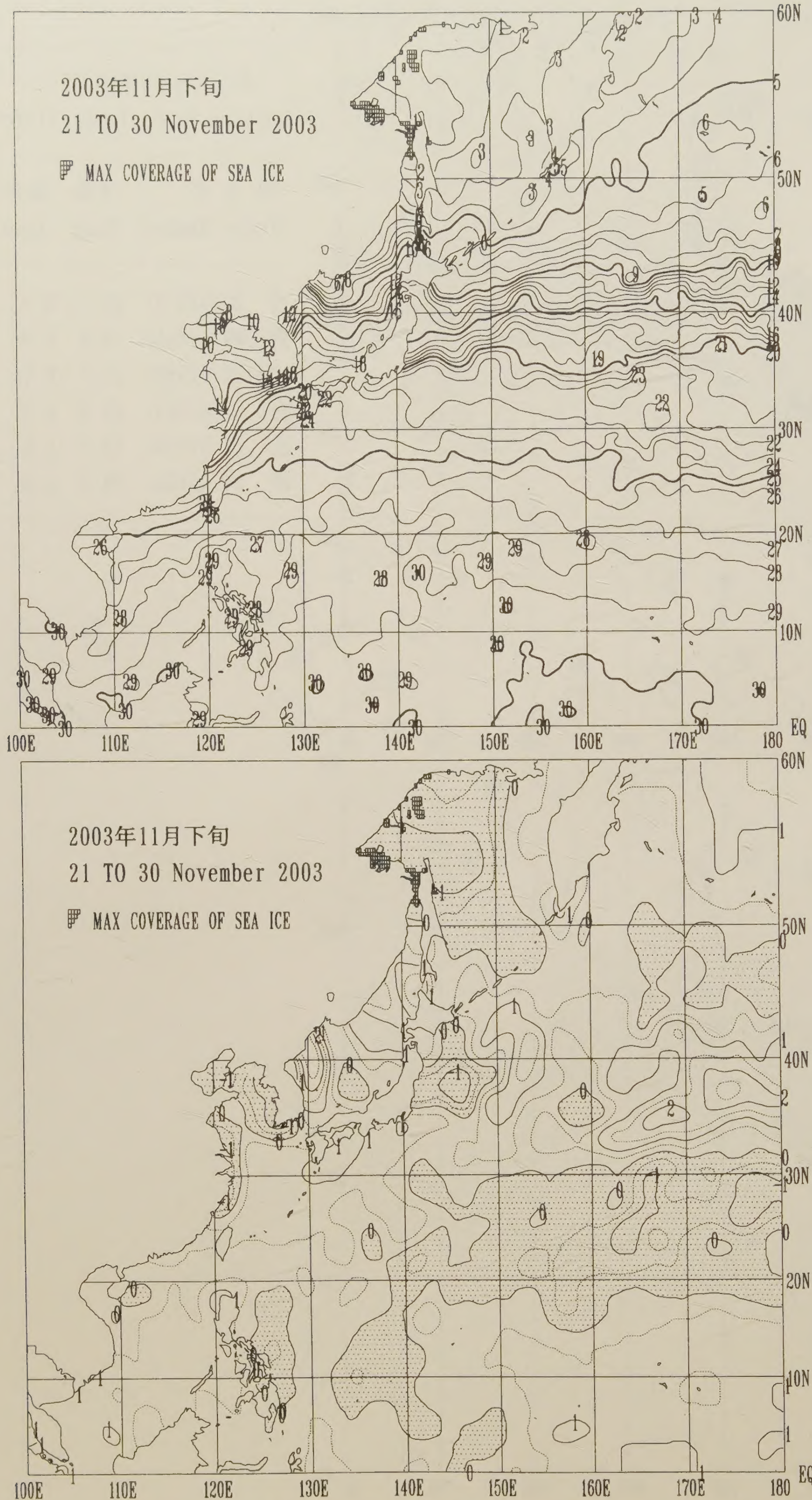
旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	25.1	0.5
御前崎(47655)	18.4	0.9
小名浜(47598)	15.7	-0.7
宮　古(47585)	15.3	0.3
江　差(47428)	13.2	1.0
浜　田(47755)	19.6	1.0

第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2003年11月中旬)

Fig.2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in November 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies



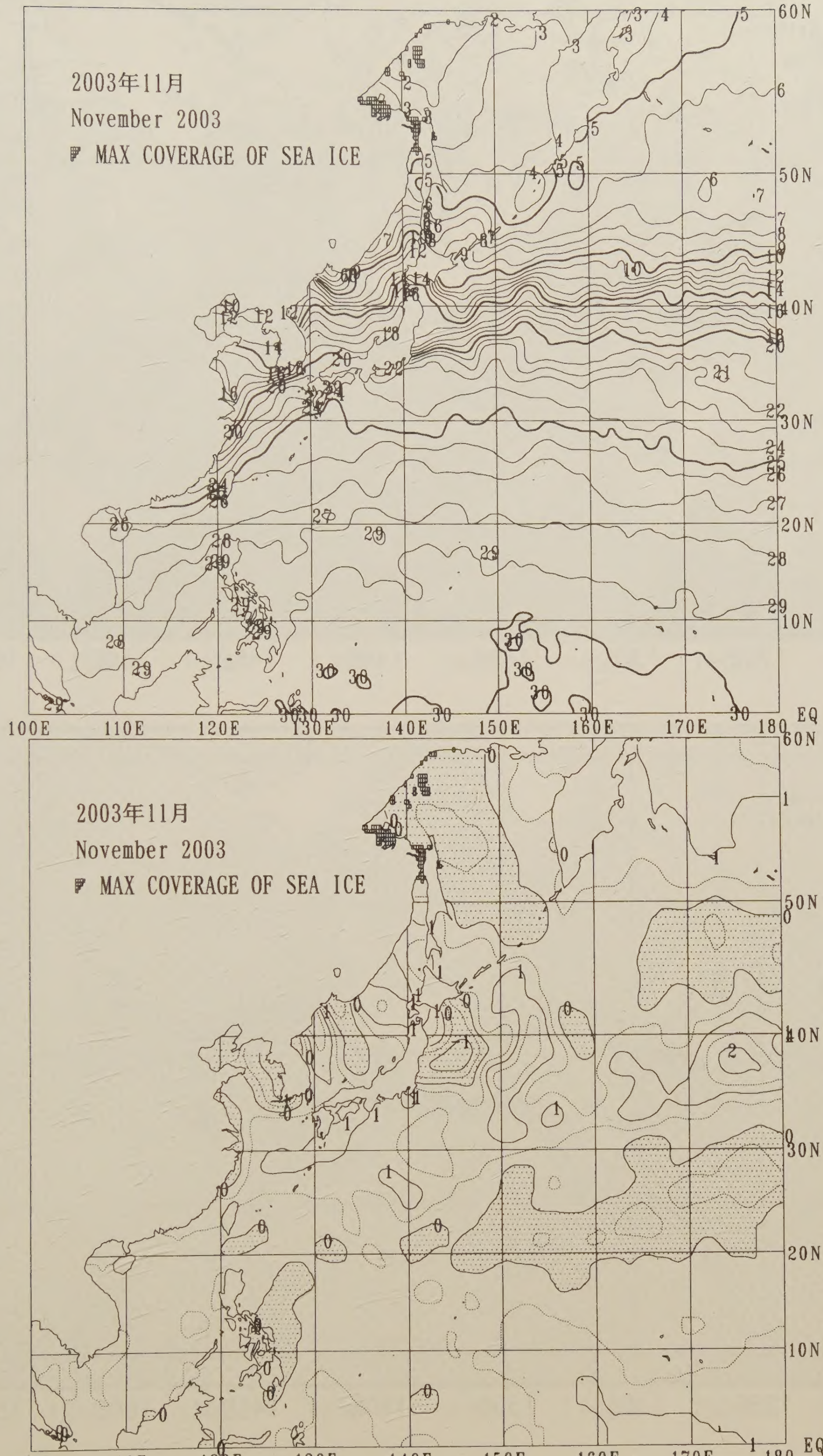
旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石 垣(47918)	24.5	0.9
御前崎(47655)	17.0	0.9
小名浜(47598)	14.7	-0.6
宮 古(47585)	14.4	0.5
江 差(47428)	11.8	1.0
浜 田(47755)	18.5	1.1

第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2003年11月下旬)

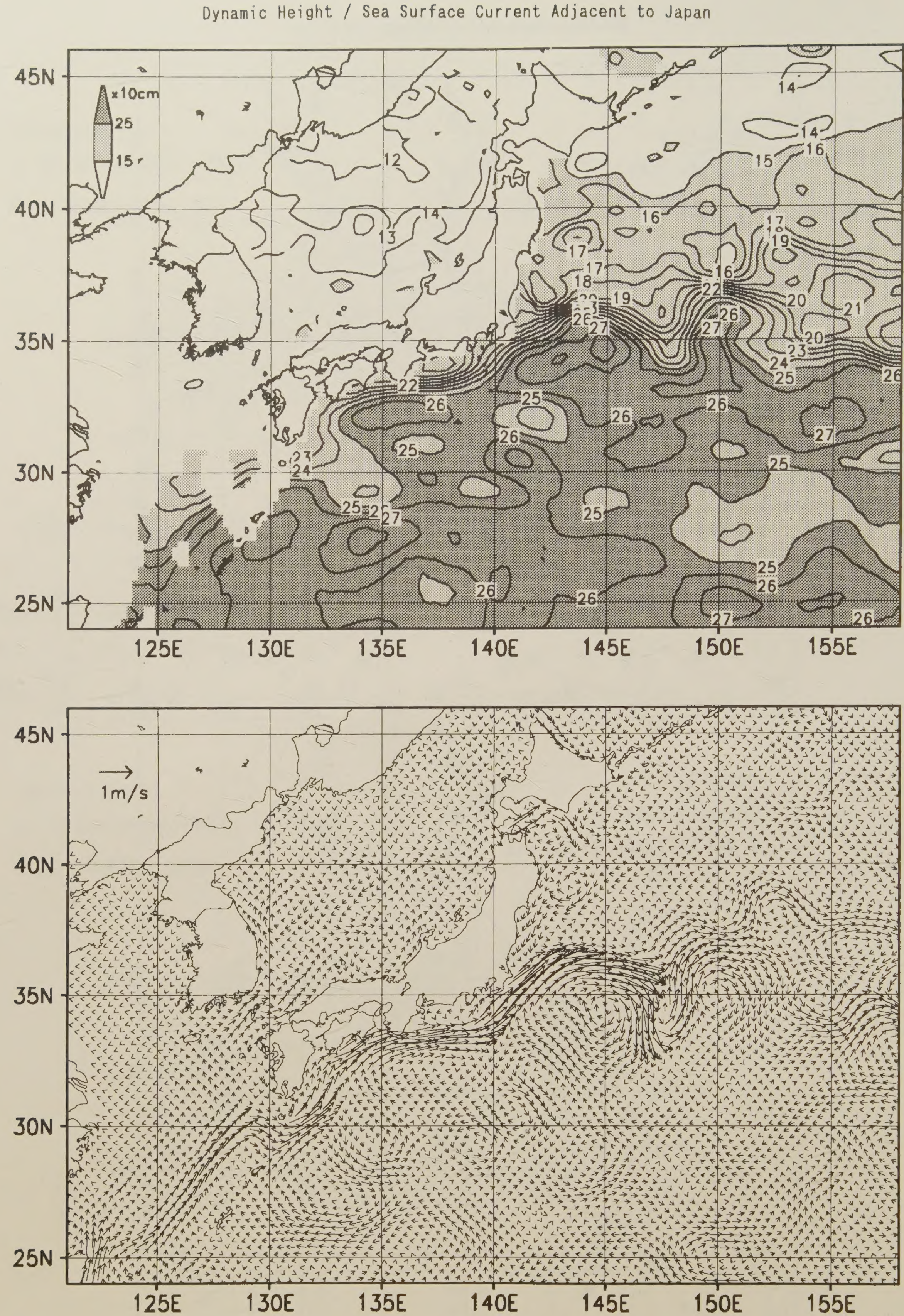
Fig. 3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in November 2003. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Monthly Mean SST & Anomalies



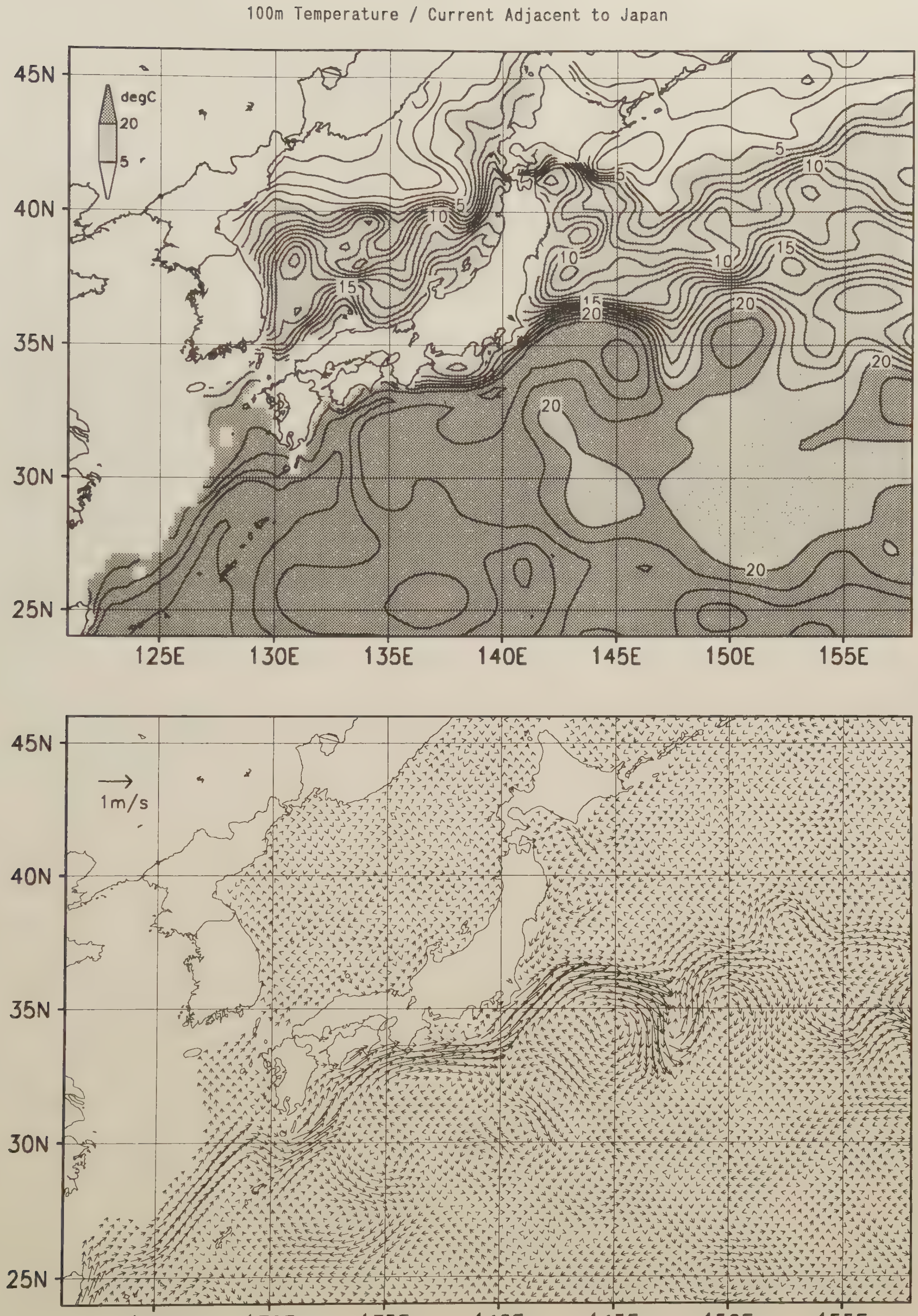
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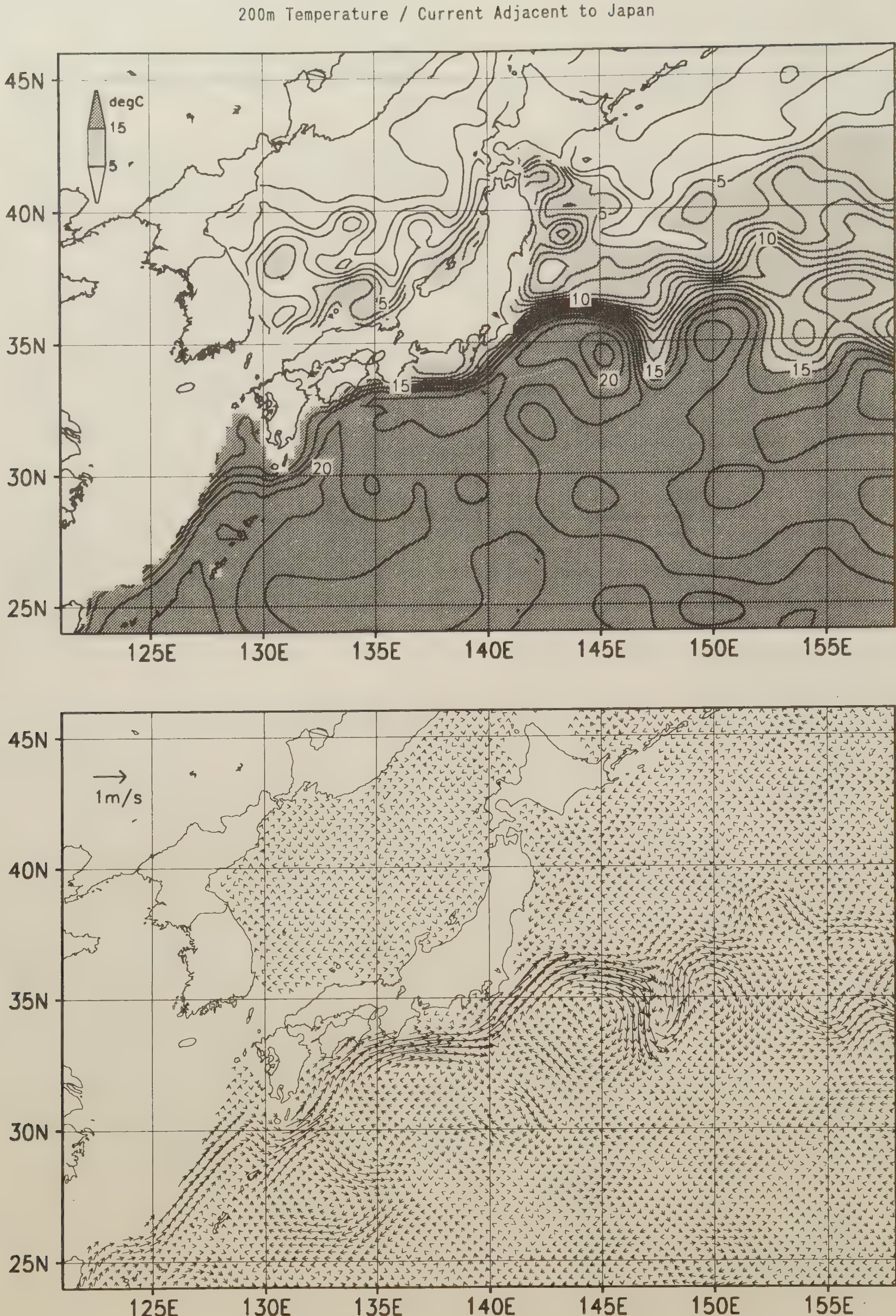
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Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for November 2003. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



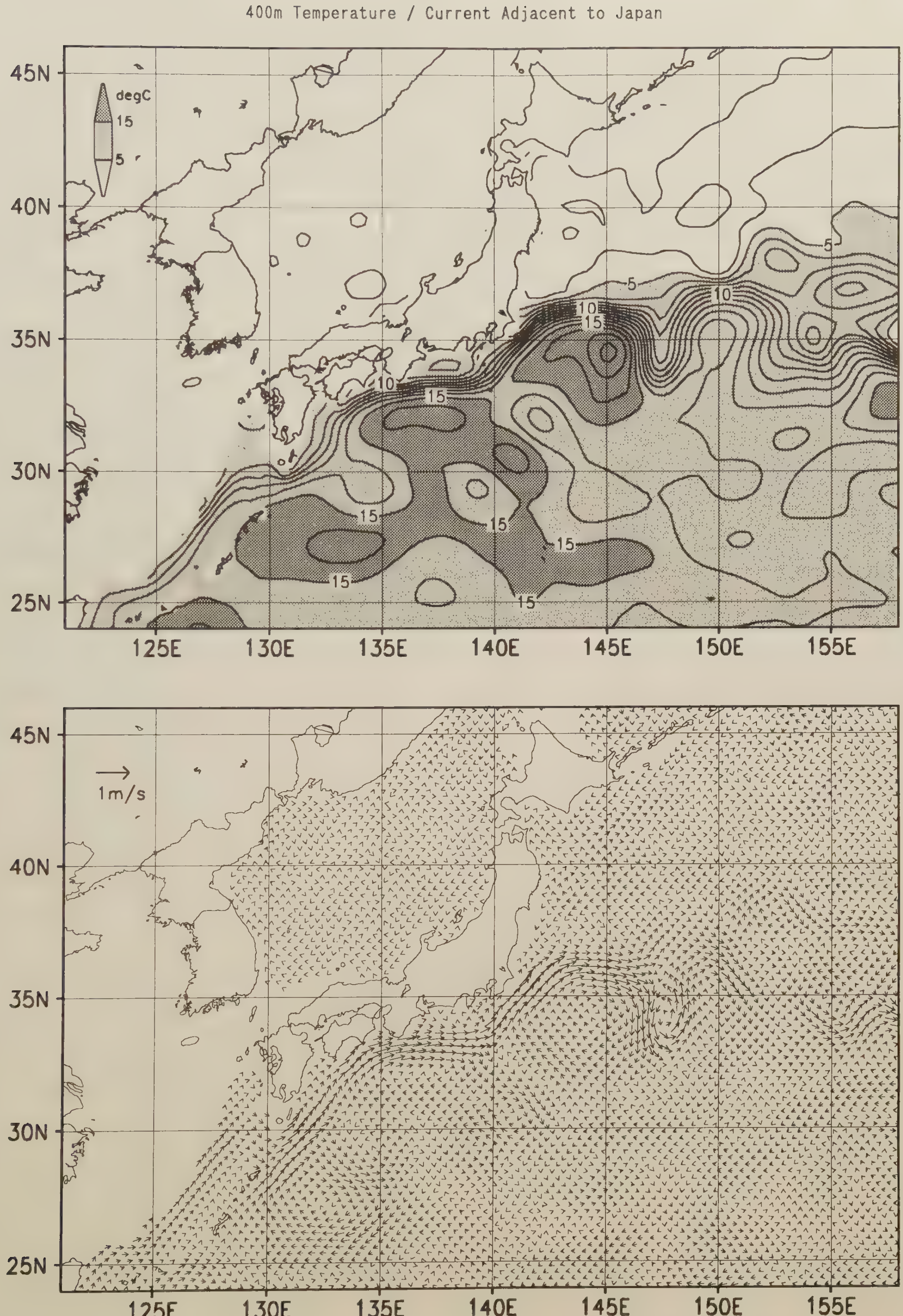
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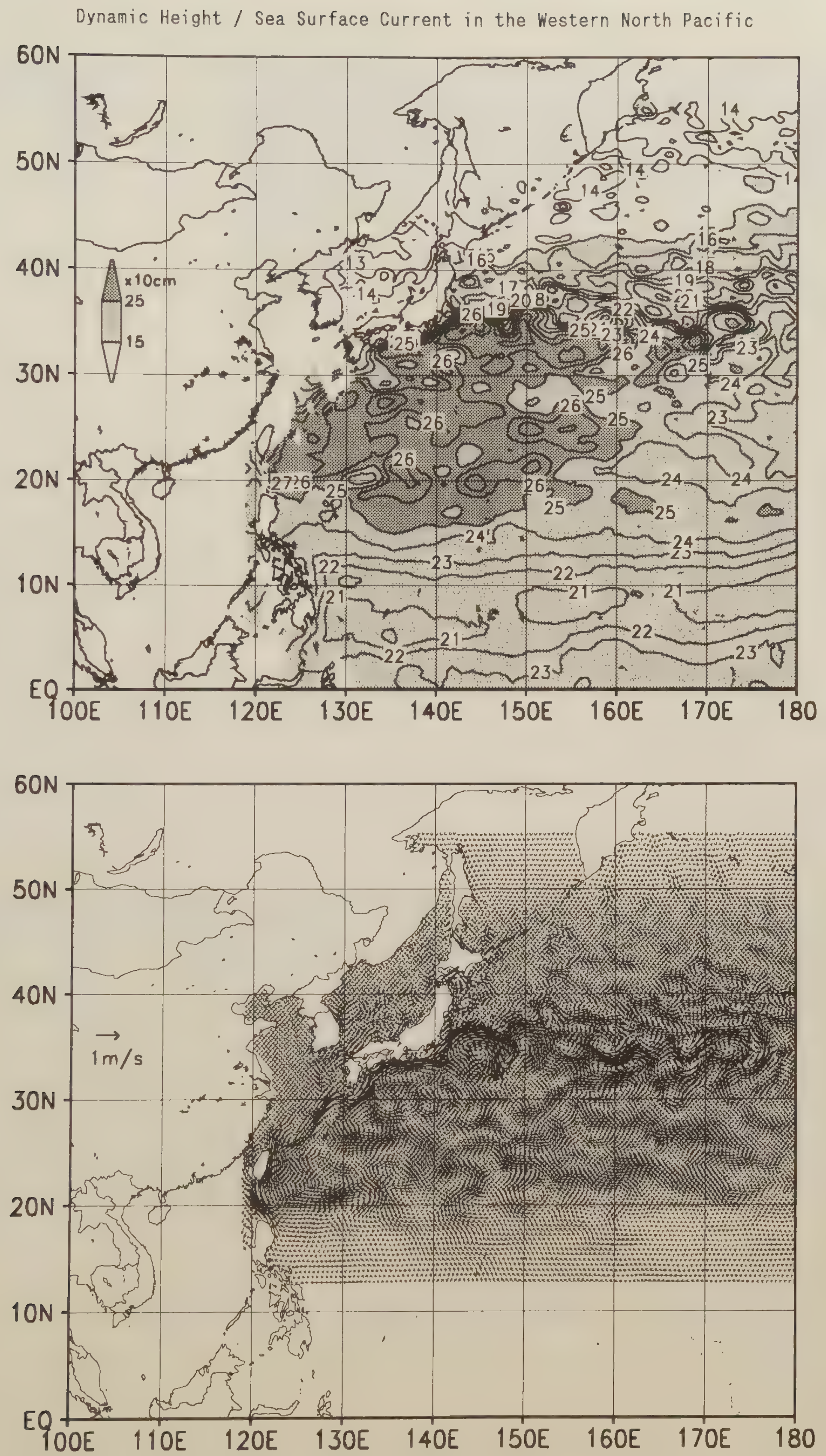
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Location of the Kuroshio axis



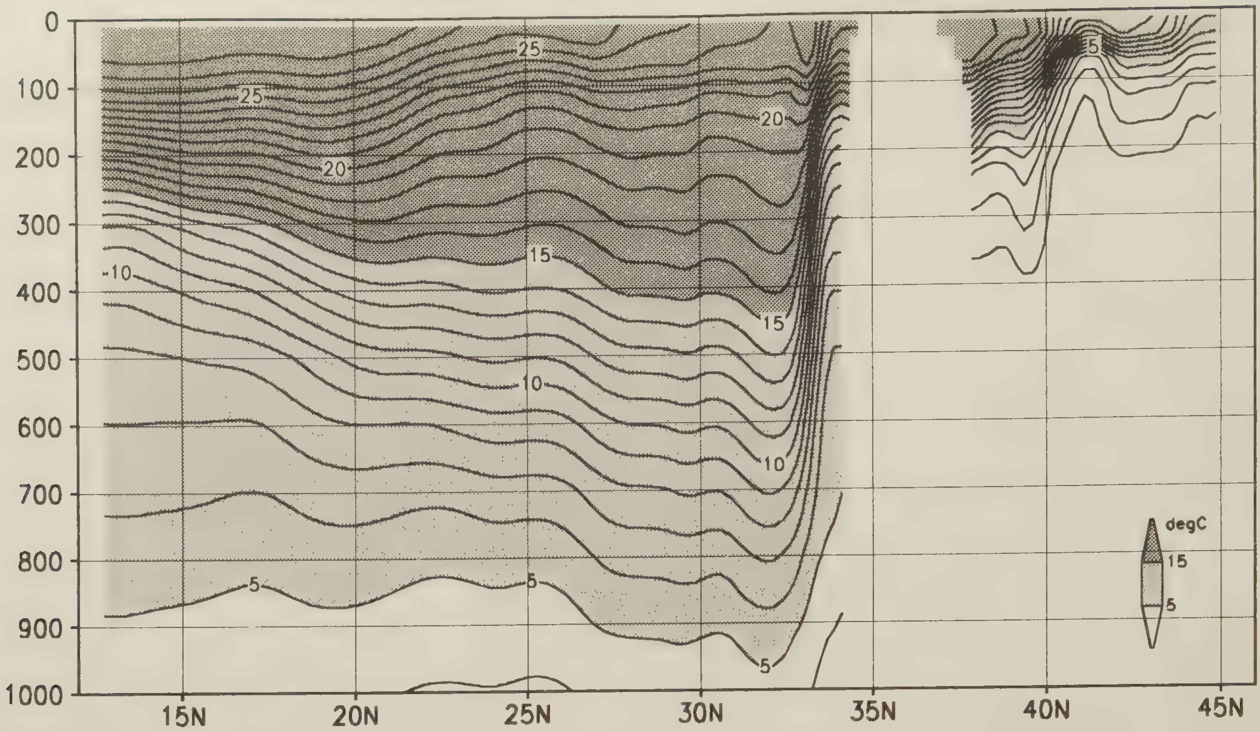
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Fig. 9 Location of the Kuroshio axis



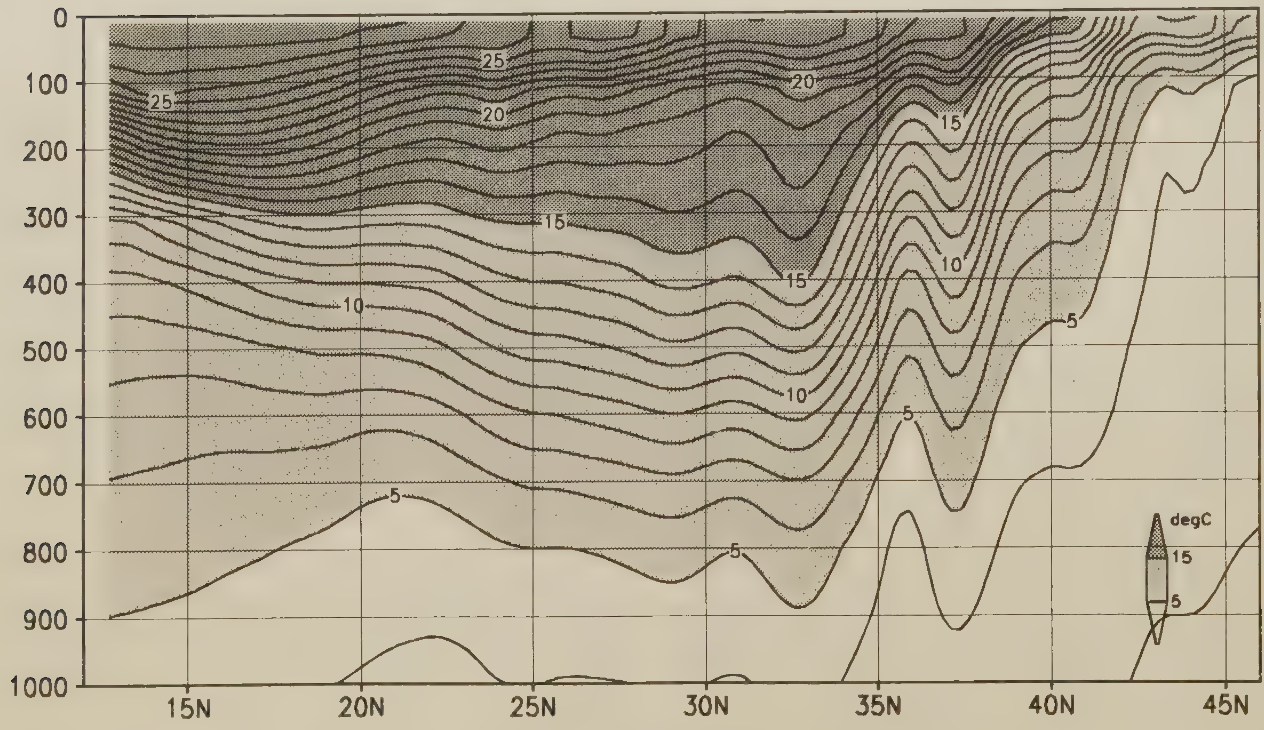
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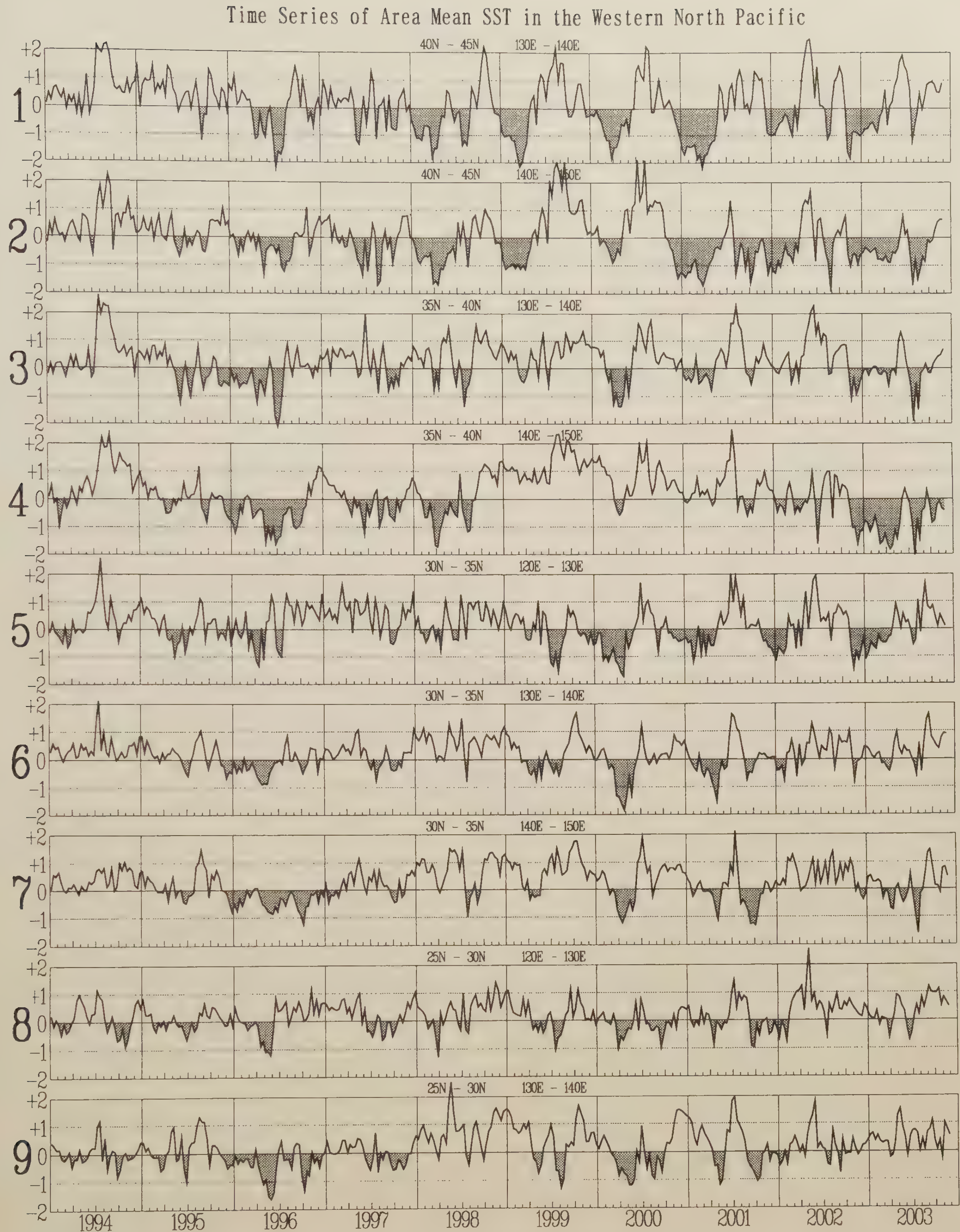
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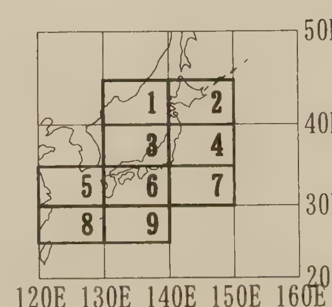
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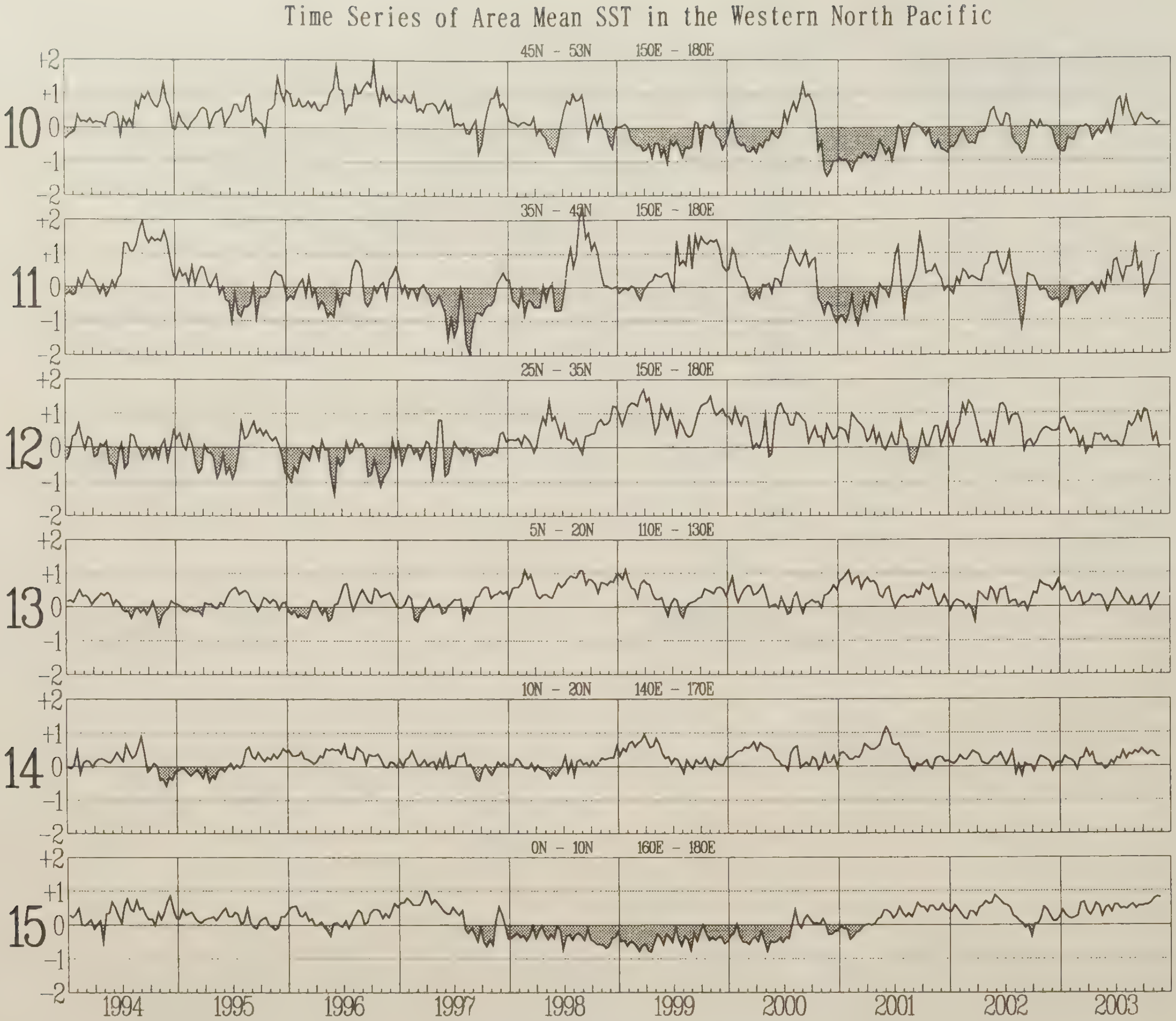
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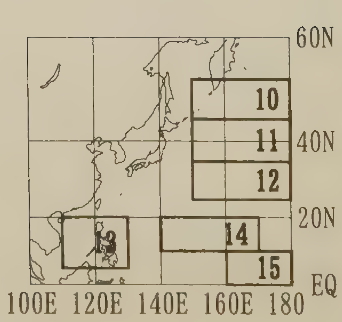
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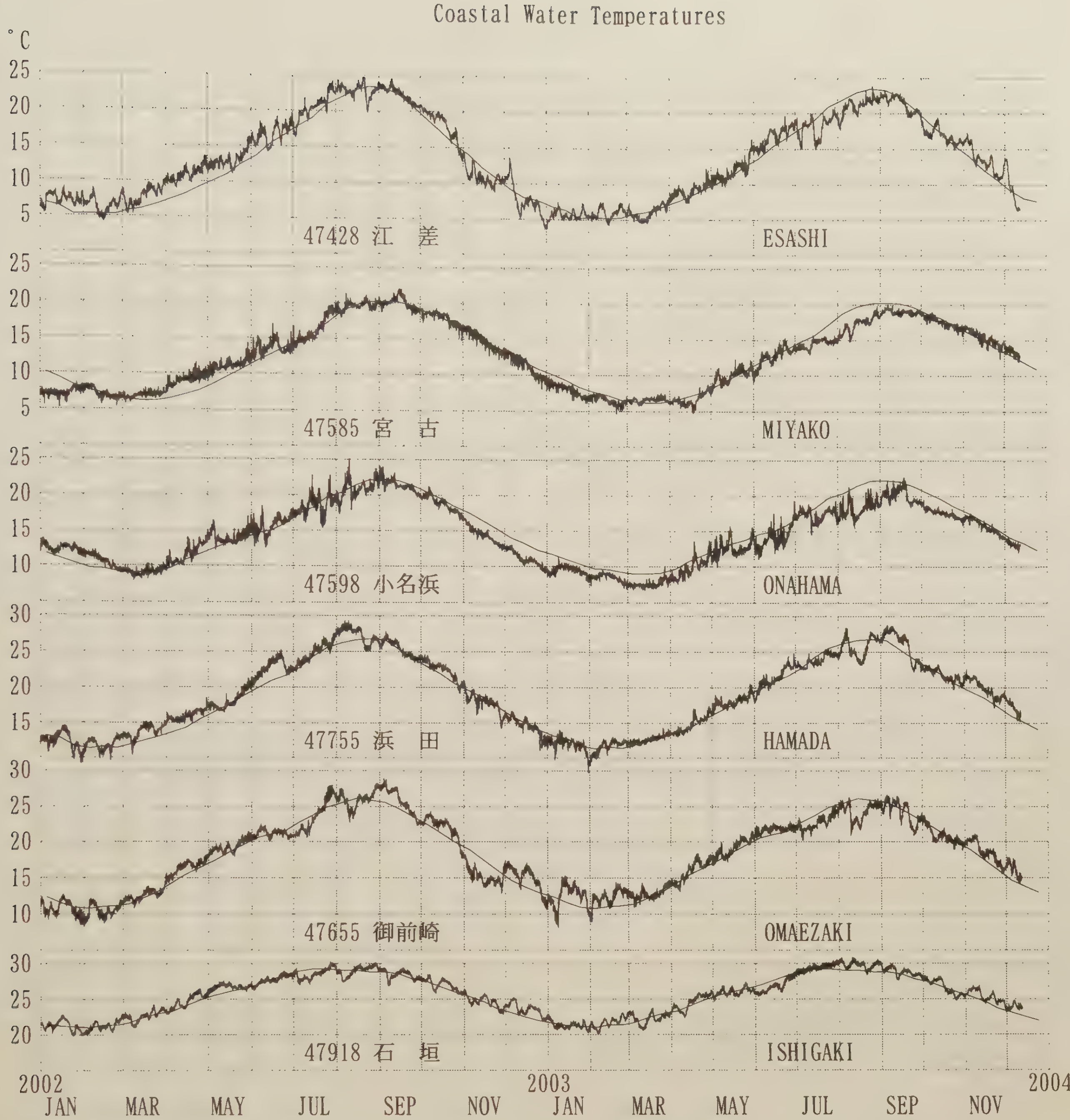
Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

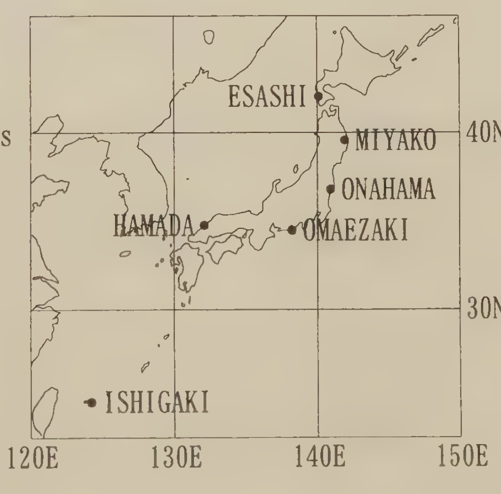


第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

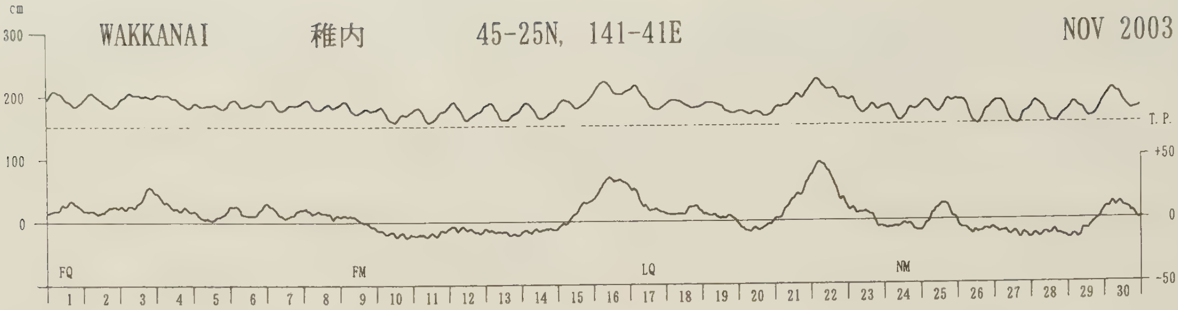


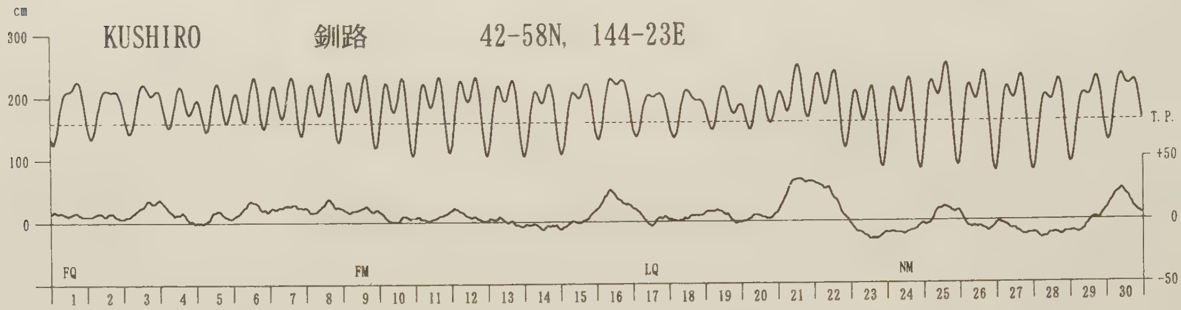


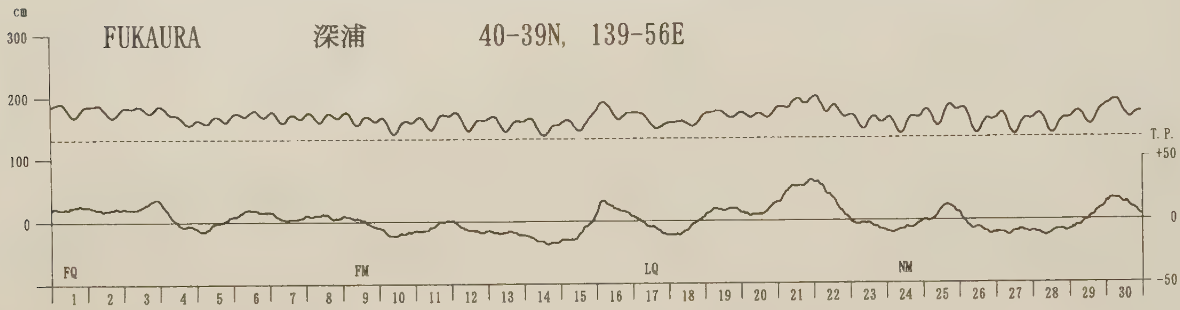


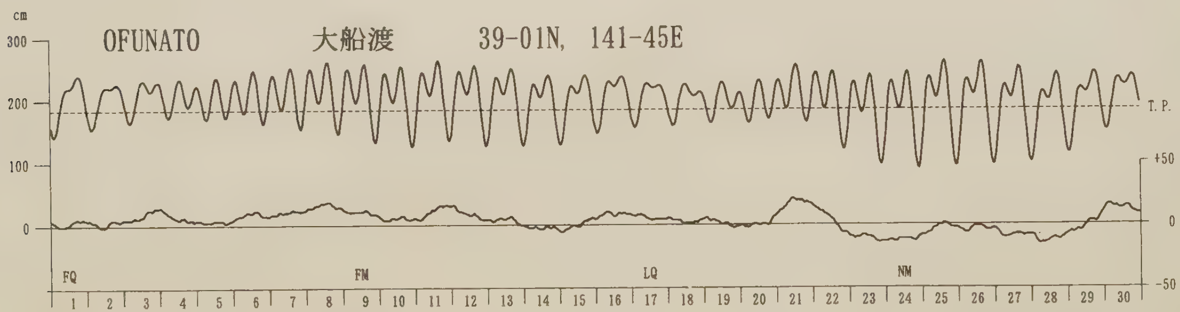
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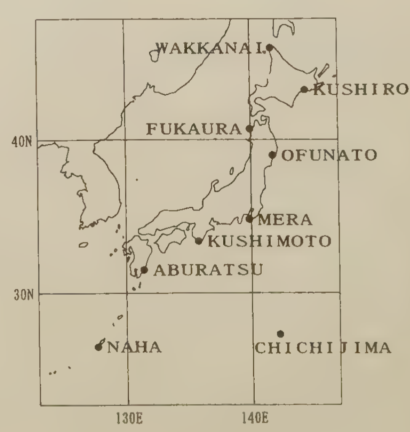




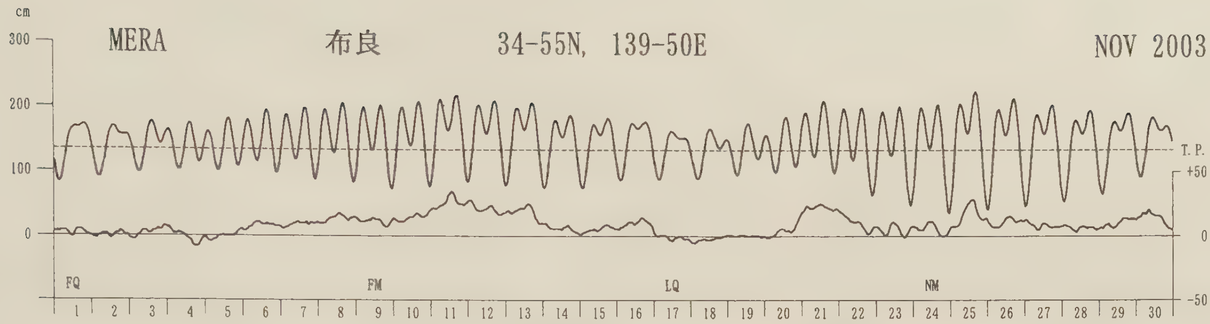


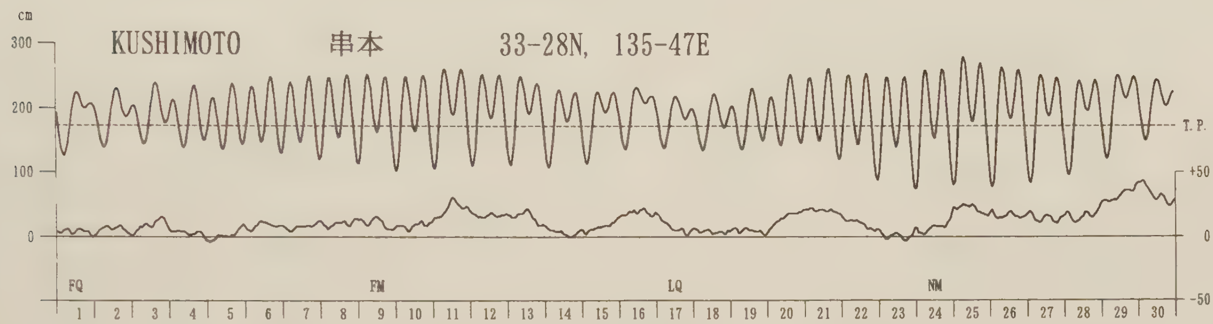
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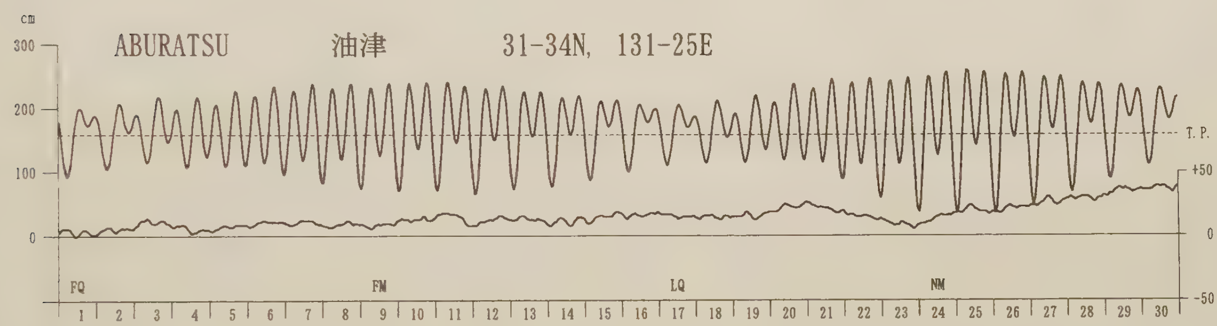
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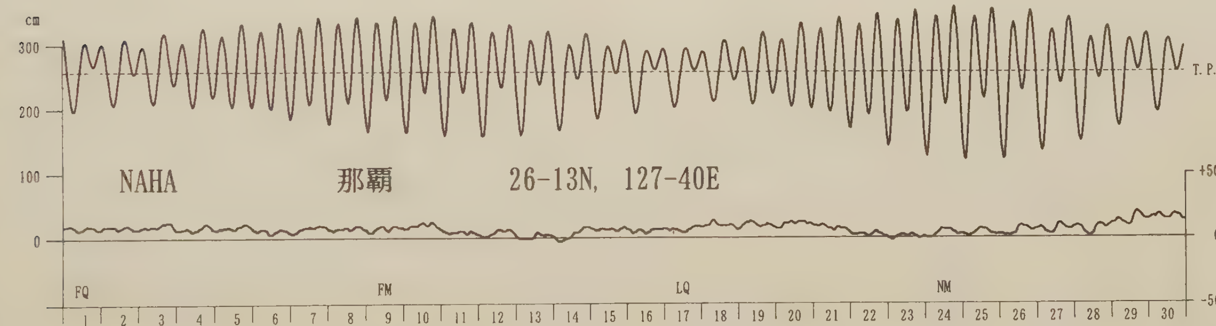


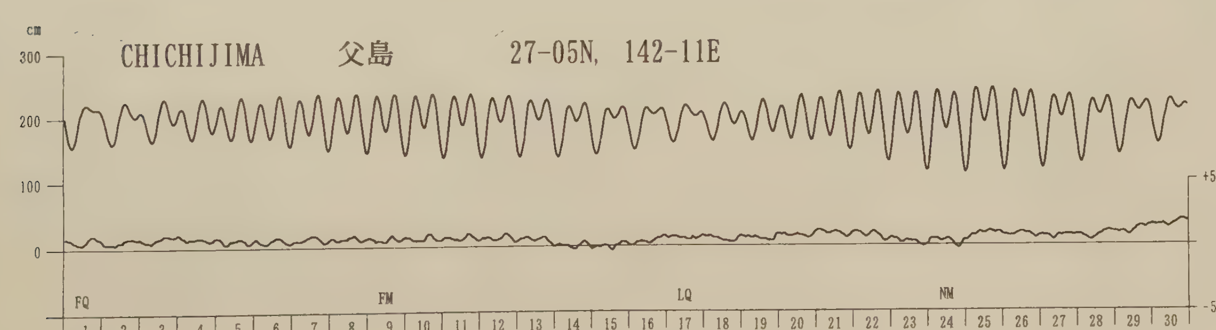
NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T.P.: Mean sea level of Tokyo Bay (Tokyo Peil)





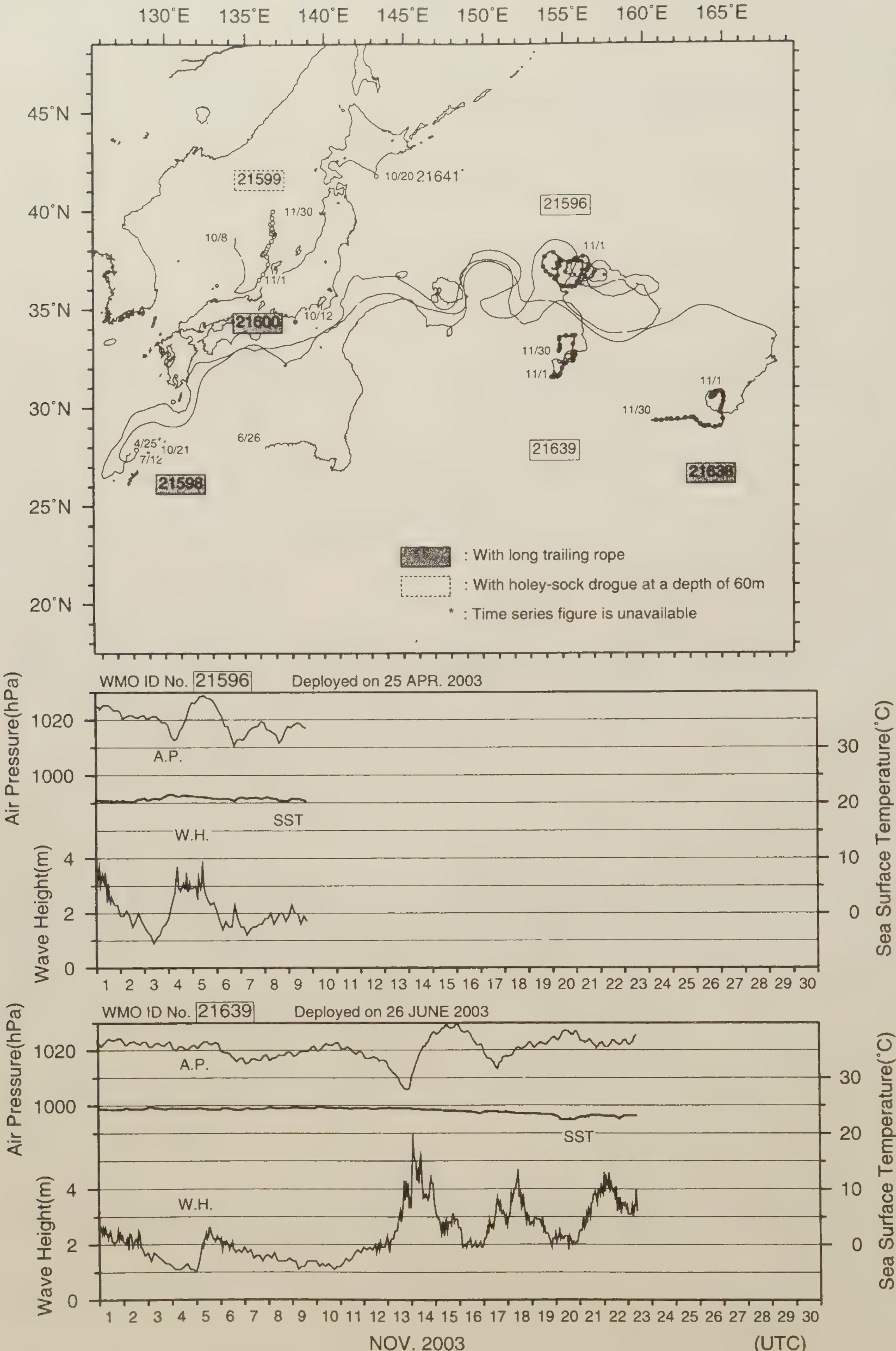






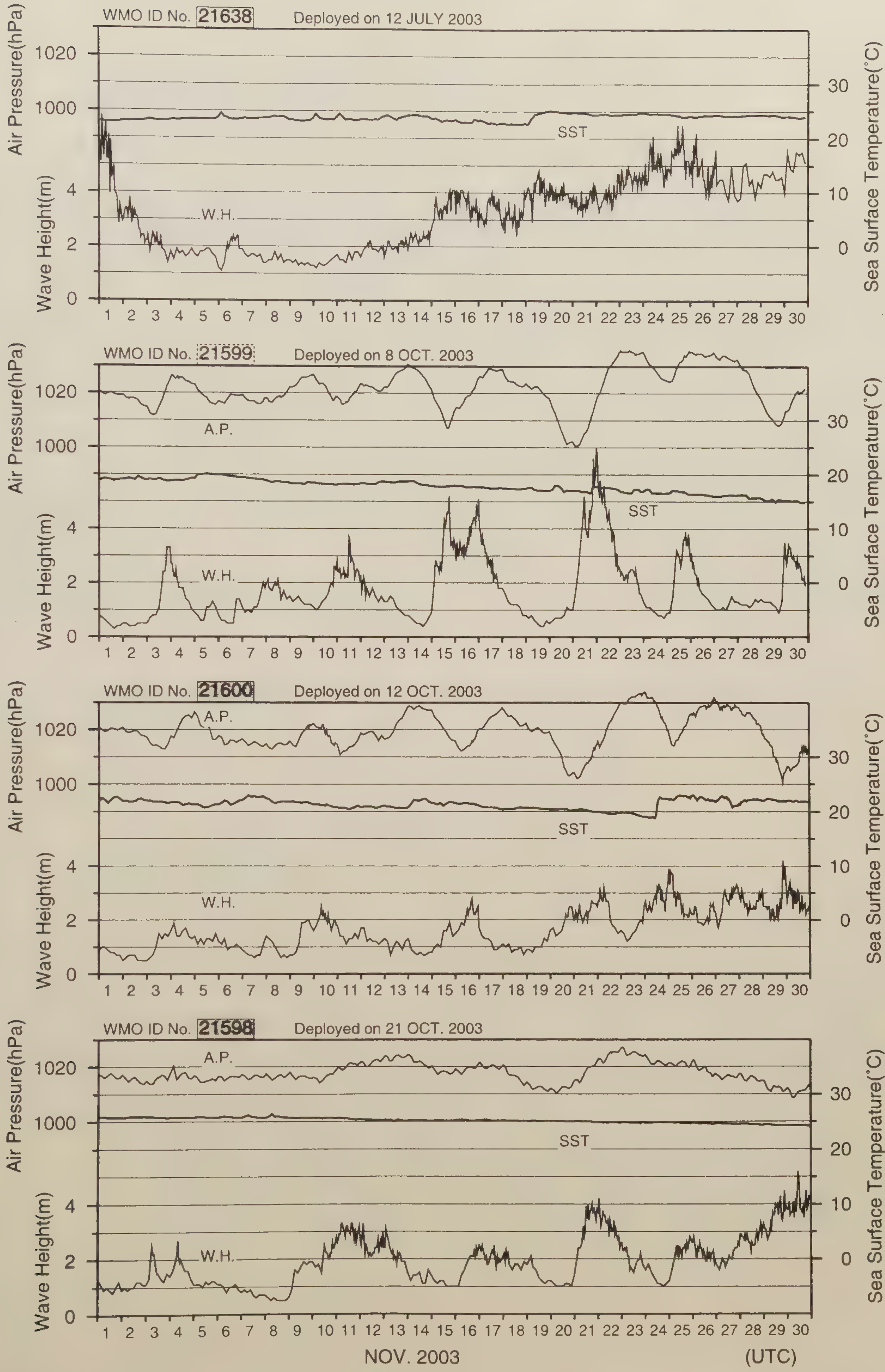
第15図 つづき

Fig. 15 continue



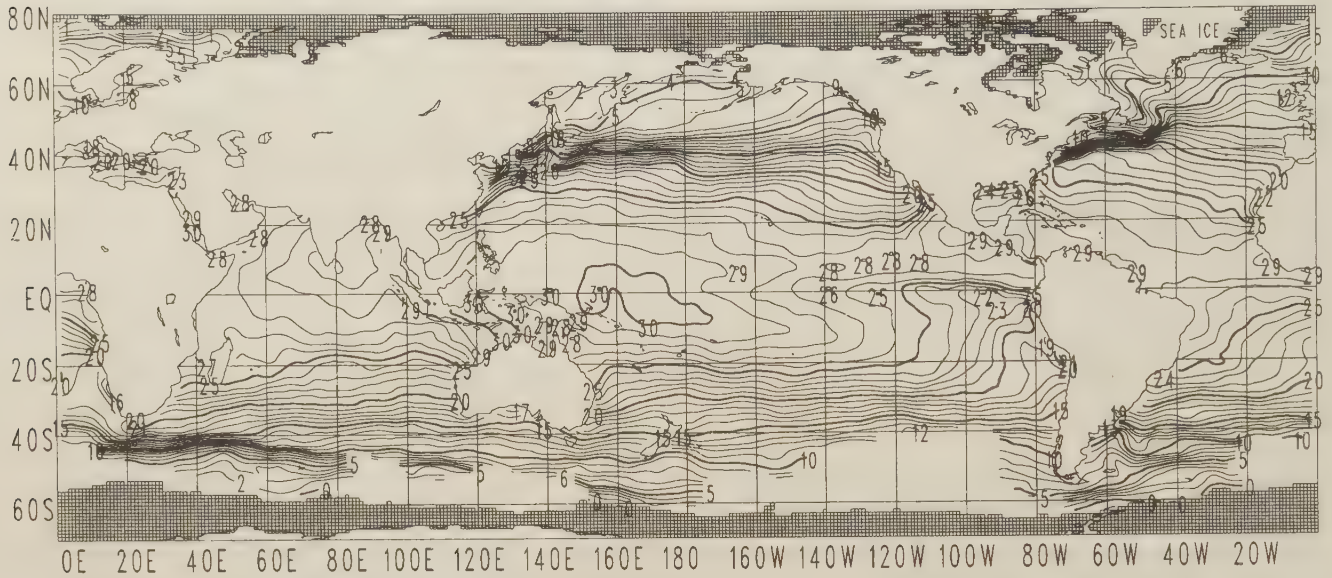
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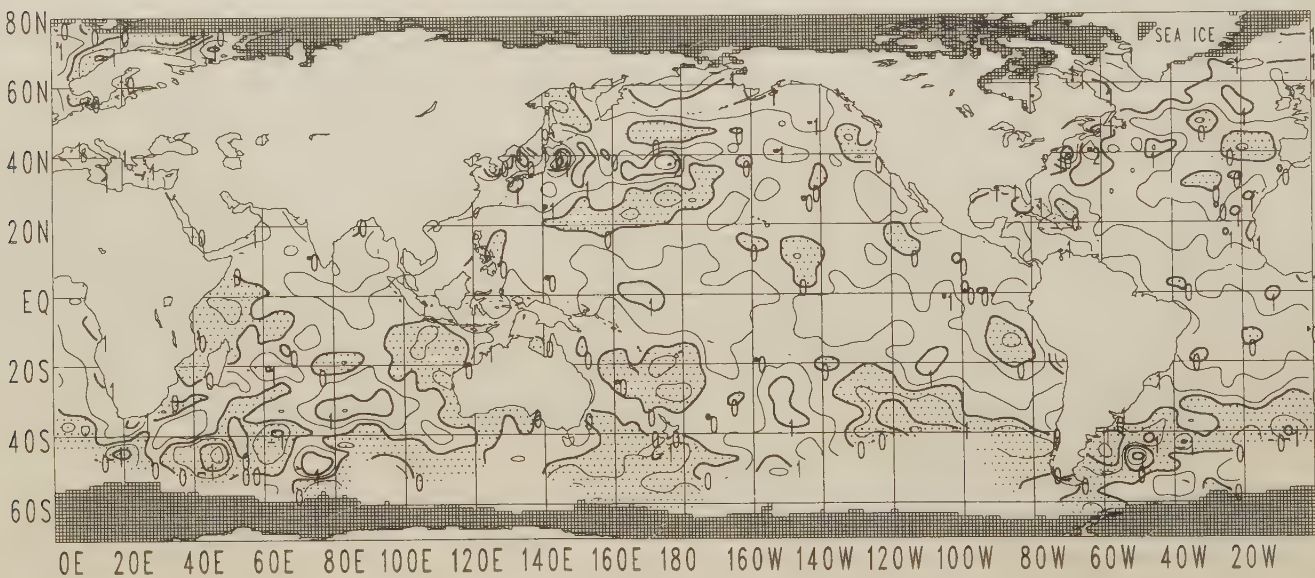
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Fig.16 continue

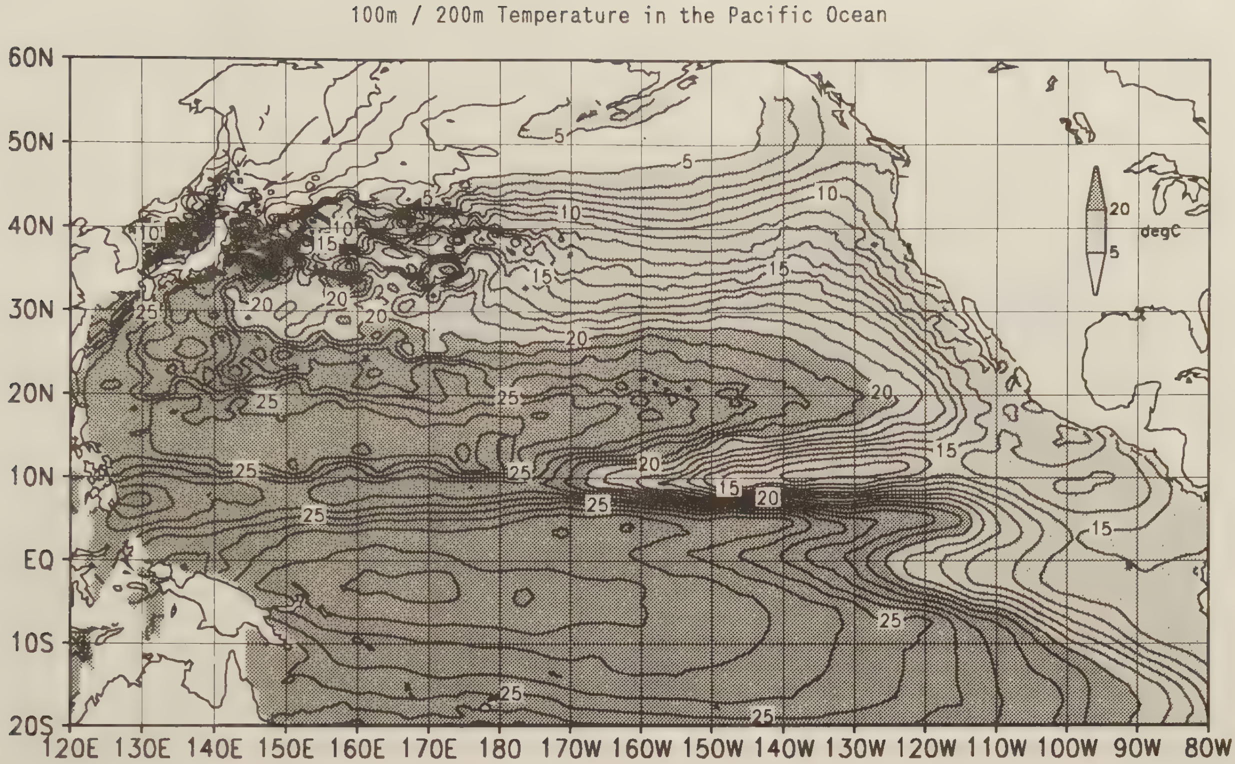
SST & Anomalies in the Global Ocean





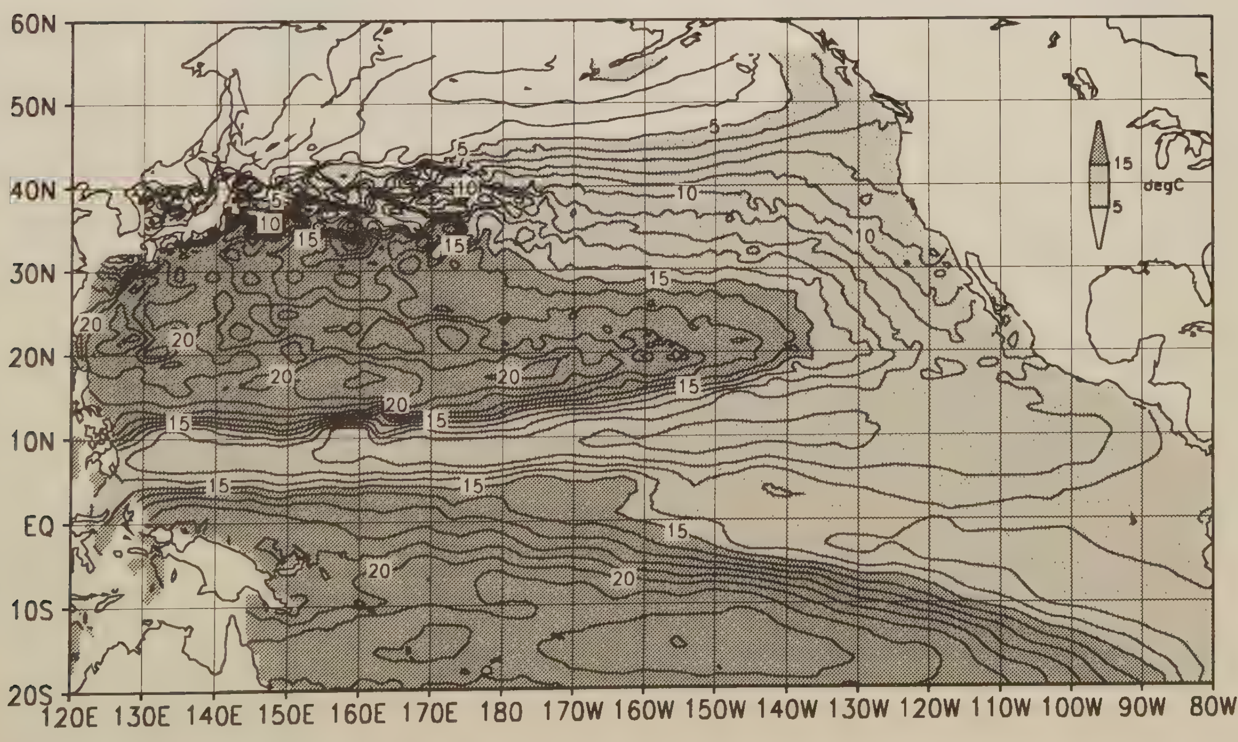
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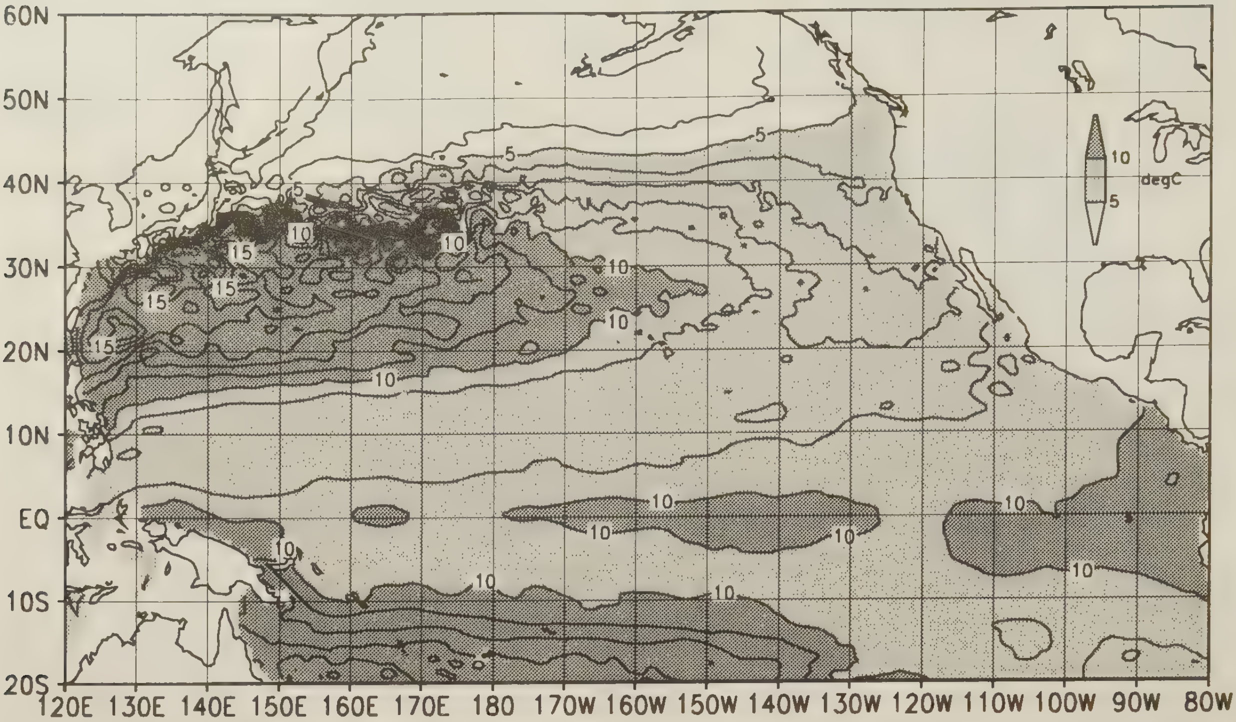
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Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for November 2003. Contour interval is 1 ˚C. (calculated by the Ocean Comprehensive Analysis System)



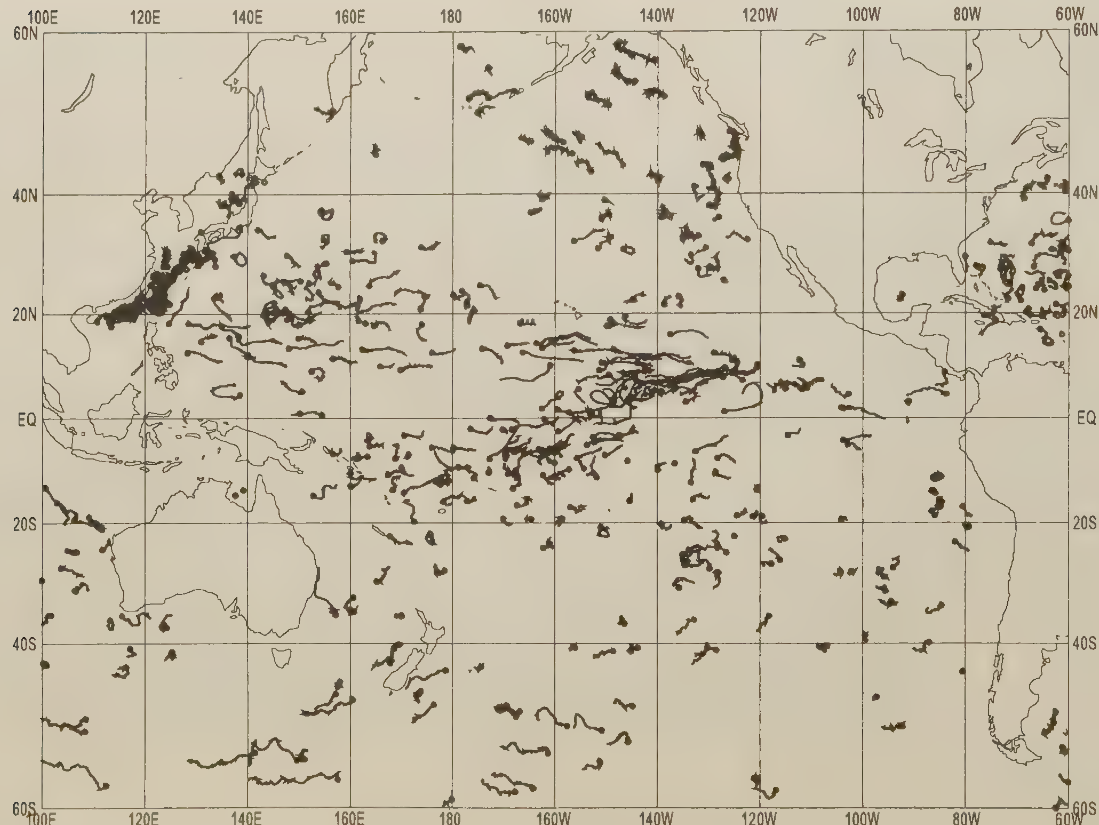
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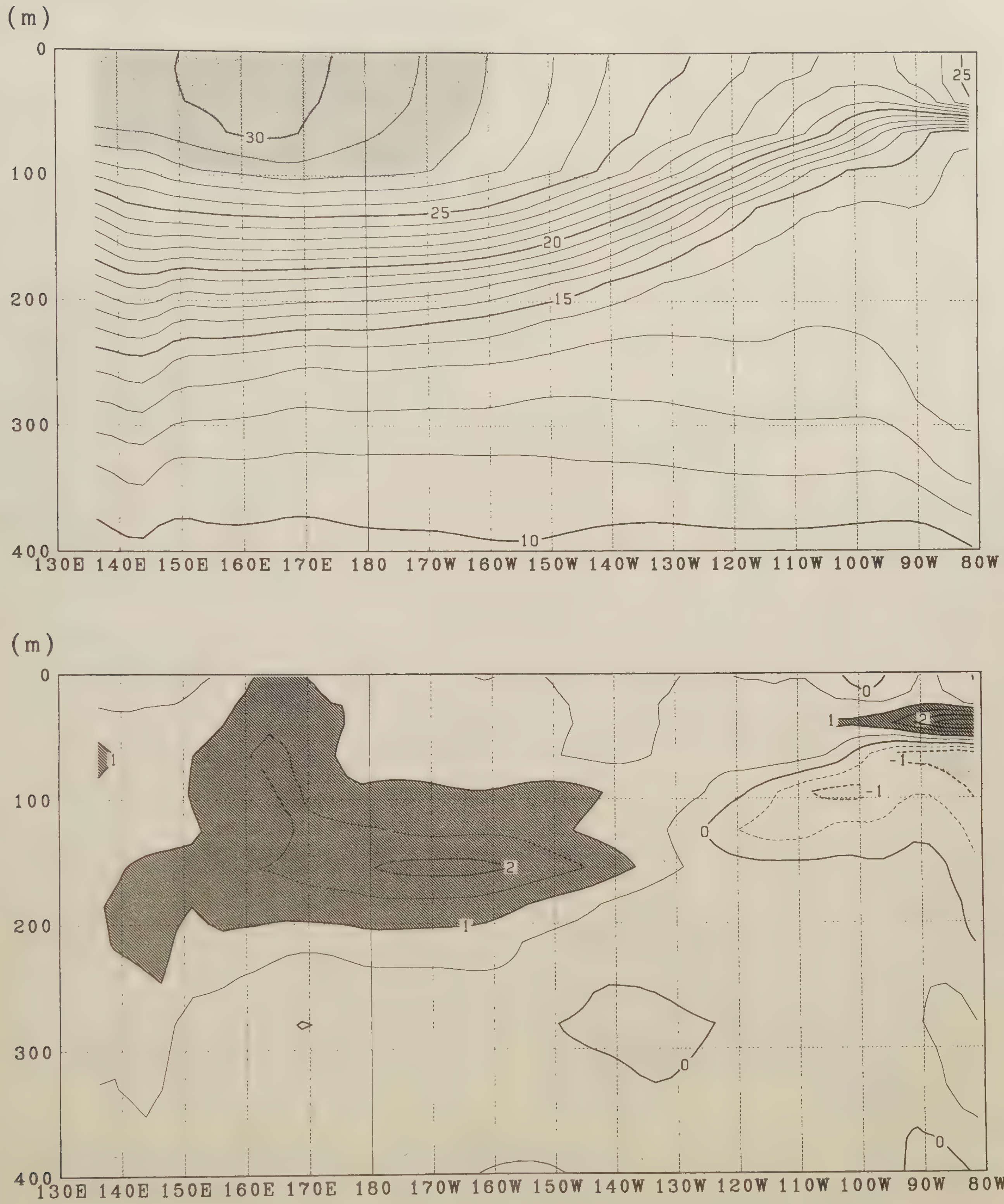
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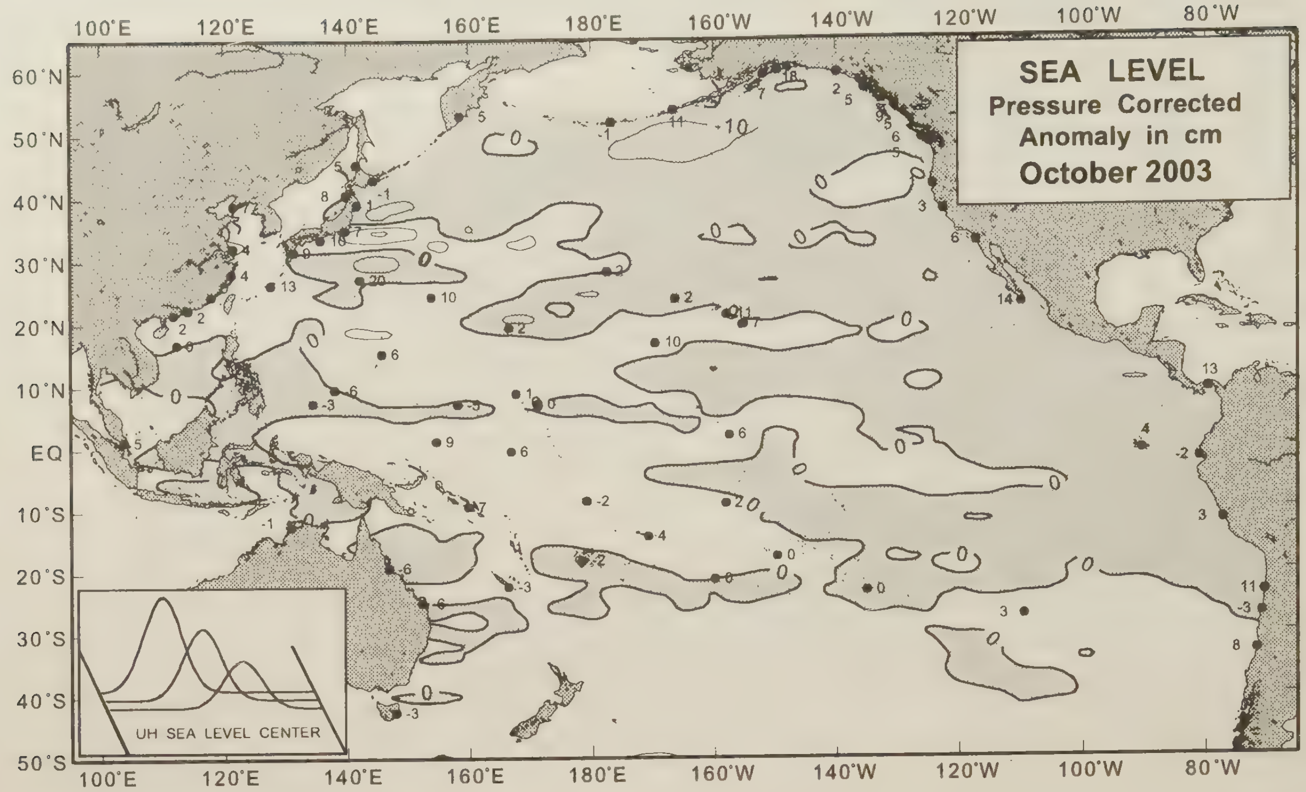
Depth-Longitude Sections of Equatorial Temperature & Anomalies



第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2003年11月）

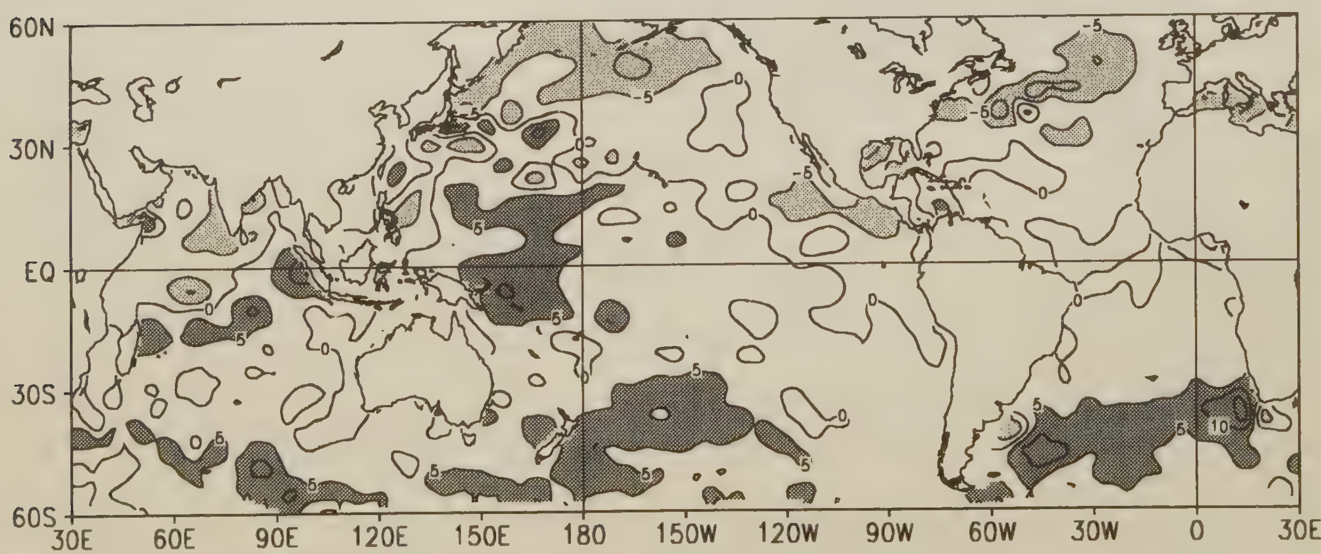
Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for November 2003. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2002 base period means.

Sea Level Anomalies / Sea Surface Height Anomalies



第 23 図　太平洋月平均海面水位偏差図 （2003 年 10 月）

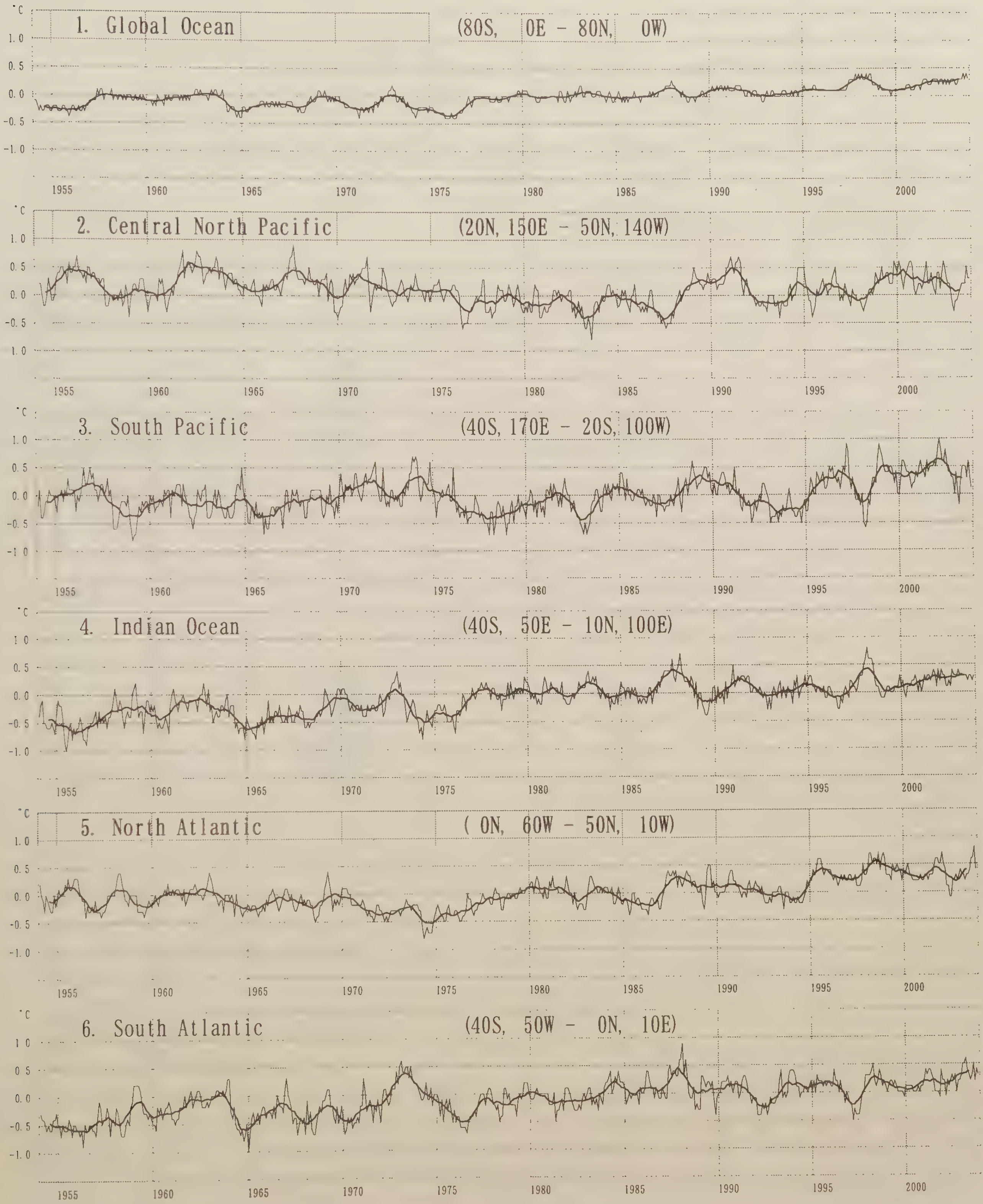
Fig. 23　Monthly sea level anomalies for October 2003 obtained from mean sea level (1993-2001) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.



第 24 図　全球月平均海面高度偏差図 （2003 年 10 月）

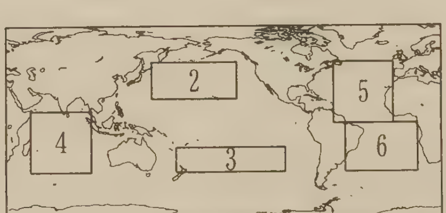
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of Jason-1 for October 2003. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

Long-term Variation of Monthly Mean SST Anomalies

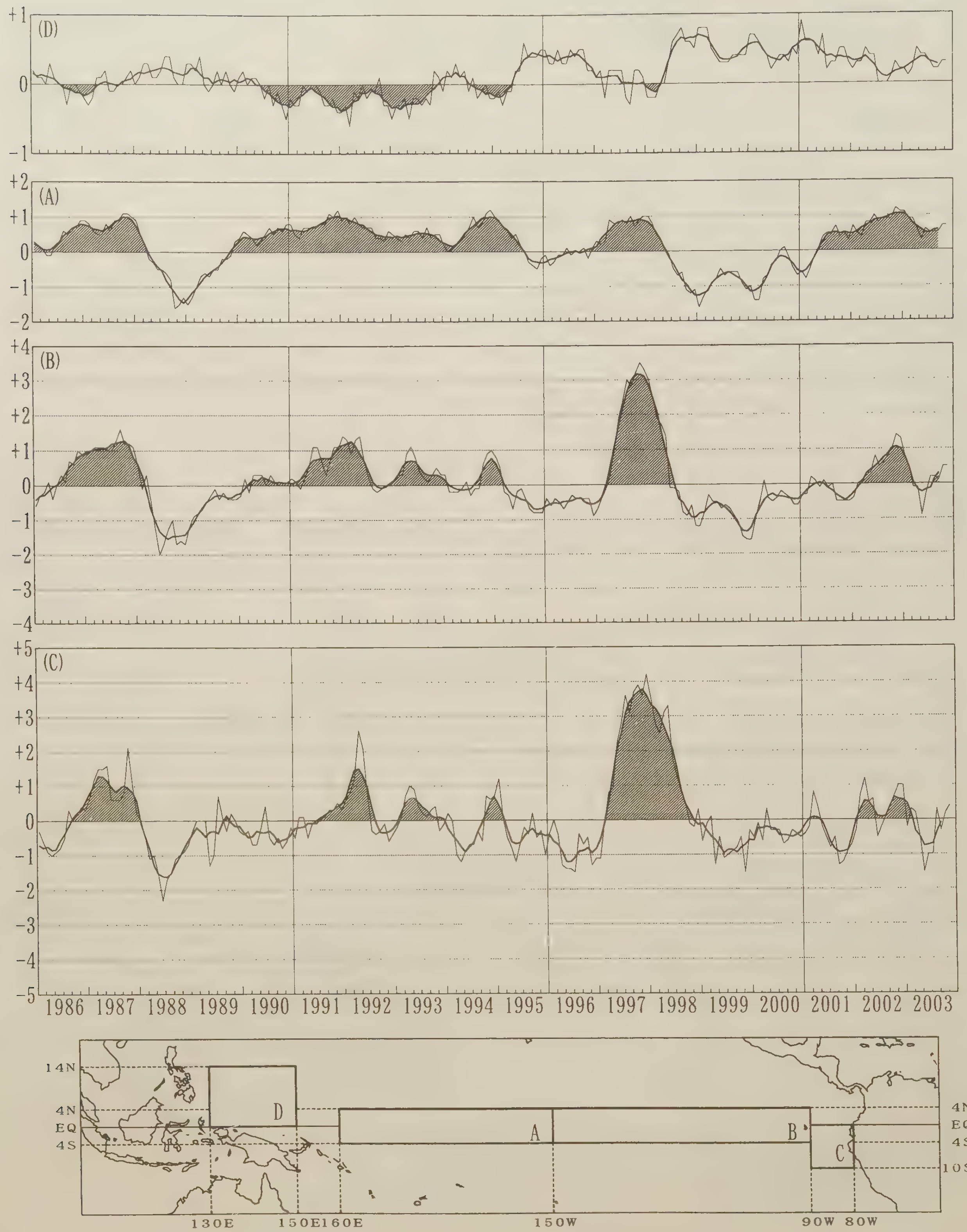


第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Tropical Pacific SST Anomalies



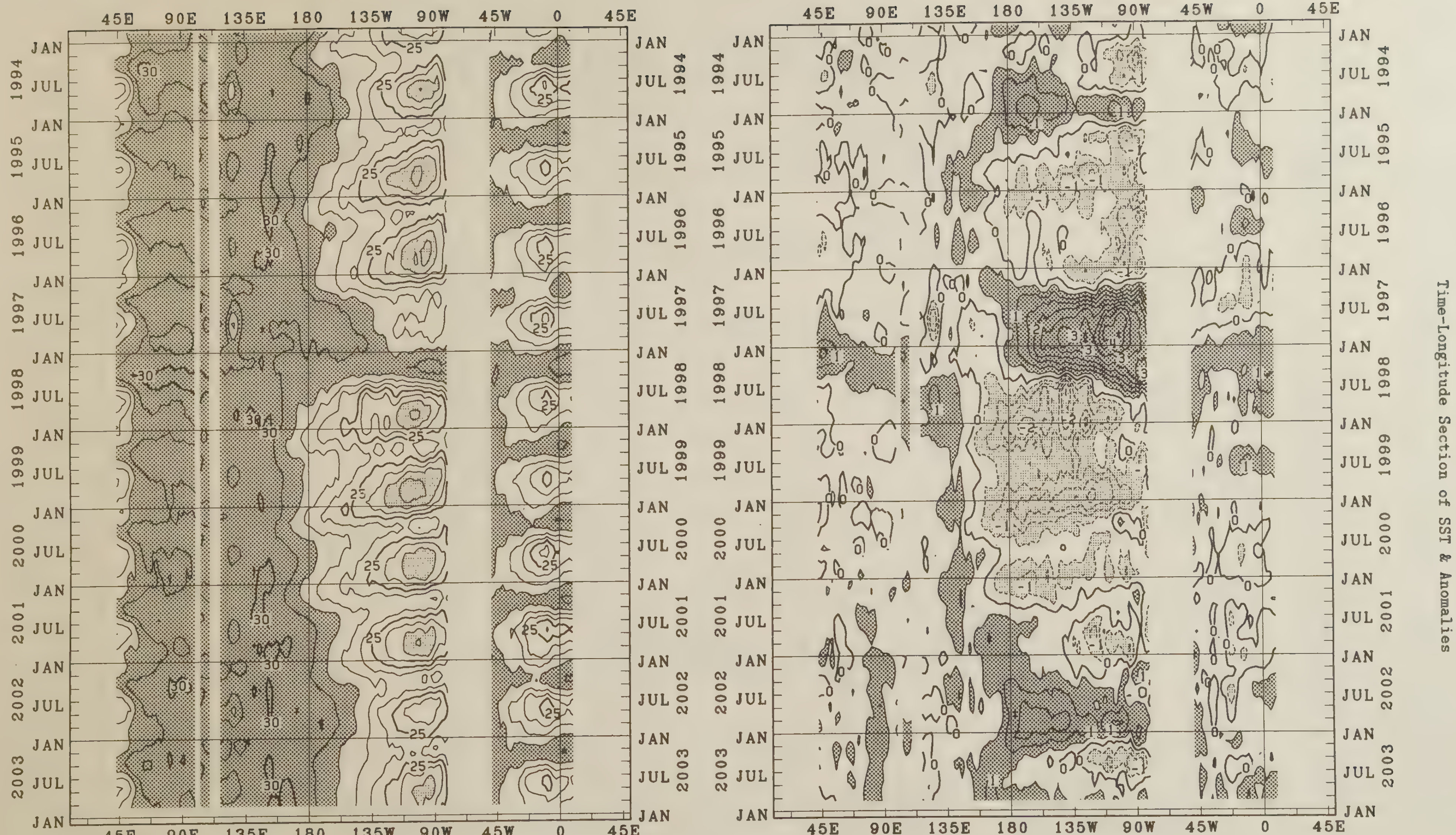
第26図　太平洋熱帯域の海面水温偏差時系列図

Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel. Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1971-2000).

MONTH YEAR	SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 01	29.4	0.9	27.4	-0.6	25.1	-0.3	24.1	-0.4	0.8	2.5	0.6
FEB 01	28.9	0.6	27.2	-0.8	26.0	-0.3	25.8	-0.2	1.0	-0.4	-3.2
MAR 01	29.1	0.6	27.6	-0.5	27.3	0.2	27.1	0.8	0.8	1.3	-0.2
APR 01	29.4	0.6	28.0	-0.2	27.3	0.1	25.8	0.4	0.1	-0.1	-0.3
MAY 01	29.7	0.4	28.7	0.1	26.8	-0.1	24.1	-0.2	-0.7	-0.2	0.9
JUN 01	30.1	0.7	28.9	0.4	26.3	0.1	22.4	-0.5	0.2	-0.2	-0.5
JUL 01	29.5	0.2	29.0	0.5	25.3	-0.1	21.1	-0.8	-0.2	-0.1	0.3
AUG 01	29.5	0.3	28.9	0.5	24.7	0.0	20.4	-0.5	-0.7	-0.9	0.1
SEP 01	29.6	0.3	29.1	0.7	24.2	-0.5	19.2	-1.3	0.1	-0.2	-0.4
OCT 01	29.9	0.5	28.8	0.4	24.2	-0.5	19.7	-1.2	-0.1	-0.9	-0.9
NOV 01	29.8	0.5	28.9	0.5	24.2	-0.5	20.9	-0.9	0.6	0.7	-0.4
DEC 01	29.3	0.3	28.5	0.3	24.5	-0.5	22.2	-0.7	-0.8	-1.2	0.3
JAN 02	28.7	0.2	28.7	0.7	25.0	-0.4	24.2	-0.3	0.3	1.3	0.7
FEB 02	28.6	0.3	28.5	0.5	26.3	0.0	26.7	0.7	0.7	1.5	-0.2
MAR 02	28.8	0.3	28.5	0.4	27.2	0.1	27.5	1.2	-0.2	0.4	1.0
APR 02	29.3	0.5	29.0	0.8	27.5	0.3	25.9	0.5	-0.1	0.1	0.3
MAY 02	29.7	0.4	29.4	0.8	27.2	0.3	24.9	0.6	-1.3	-1.1	0.7
JUN 02	29.8	0.4	29.5	1.0	27.0	0.8	22.4	-0.5	-0.4	-0.2	0.4
JUL 02	29.3	0.0	29.3	0.8	25.9	0.5	21.7	-0.2	-0.7	0.5	1.6
AUG 02	29.2	0.0	29.3	0.9	25.3	0.6	21.0	0.1	-1.2	-1.4	0.5
SEP 02	29.3	0.0	29.3	0.9	25.5	0.8	20.9	0.4	-0.5	-0.3	0.8
OCT 02	29.5	0.1	29.3	0.9	25.7	1.0	21.6	0.7	-0.5	-1.0	-0.3
NOV 02	29.6	0.3	29.6	1.2	26.1	1.4	22.8	1.0	-0.4	0.1	1.0
DEC 02	29.2	0.2	29.3	1.1	26.3	1.3	23.9	1.0	-1.0	-0.1	1.7
JAN 03	28.7	0.2	29.1	1.1	26.2	0.8	24.3	-0.2	-0.1	-0.1	0.2
FEB 03	28.4	0.1	28.9	0.9	26.8	0.5	26.3	0.3	-0.5	-1.5	-0.2
MAR 03	28.7	0.2	29.0	0.9	27.0	-0.1	26.5	0.2	-0.3	-0.2	0.5
APR 03	29.3	0.5	28.8	0.6	27.1	-0.1	24.9	-0.5	-0.1	0.5	0.8
MAY 03	29.7	0.4	28.9	0.3	26.0	-0.9	22.8	-1.5	-0.6	-0.7	0.2
JUN 03	29.8	0.4	29.1	0.6	25.9	-0.3	21.9	-1.0	-0.9	-0.9	0.4
JUL 03	29.6	0.3	29.0	0.5	25.6	0.2	20.9	-1.0	0.2	0.7	0.3
AUG 03	29.4	0.2	28.9	0.5	24.9	0.2	21.2	0.3	0.0	-0.2	-0.1
SEP 03	29.5	0.2	28.9	0.5	24.8	0.1	20.2	-0.3	-0.1	-0.3	0.0
OCT 03	29.7	0.3	29.1	0.7	25.2	0.5	21.1	0.2	-0.1	-0.5	-0.4
NOV 03	29.6	0.3	29.1	0.7	25.2	0.5	22.2	0.4	-0.2	0.0	0.4

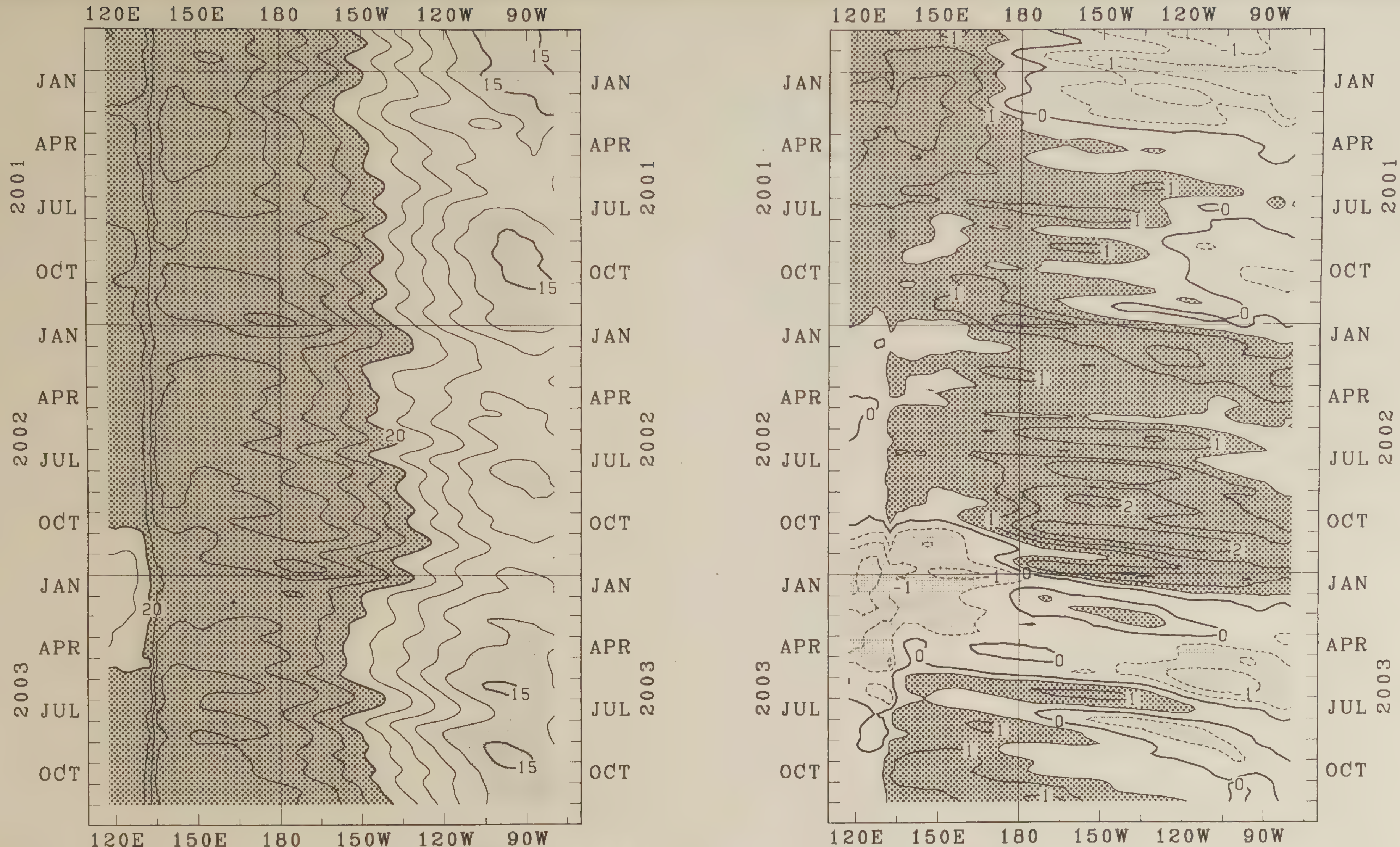
第1表　太平洋熱帯域の大気及び海洋の監視指数

Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean



第 27 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

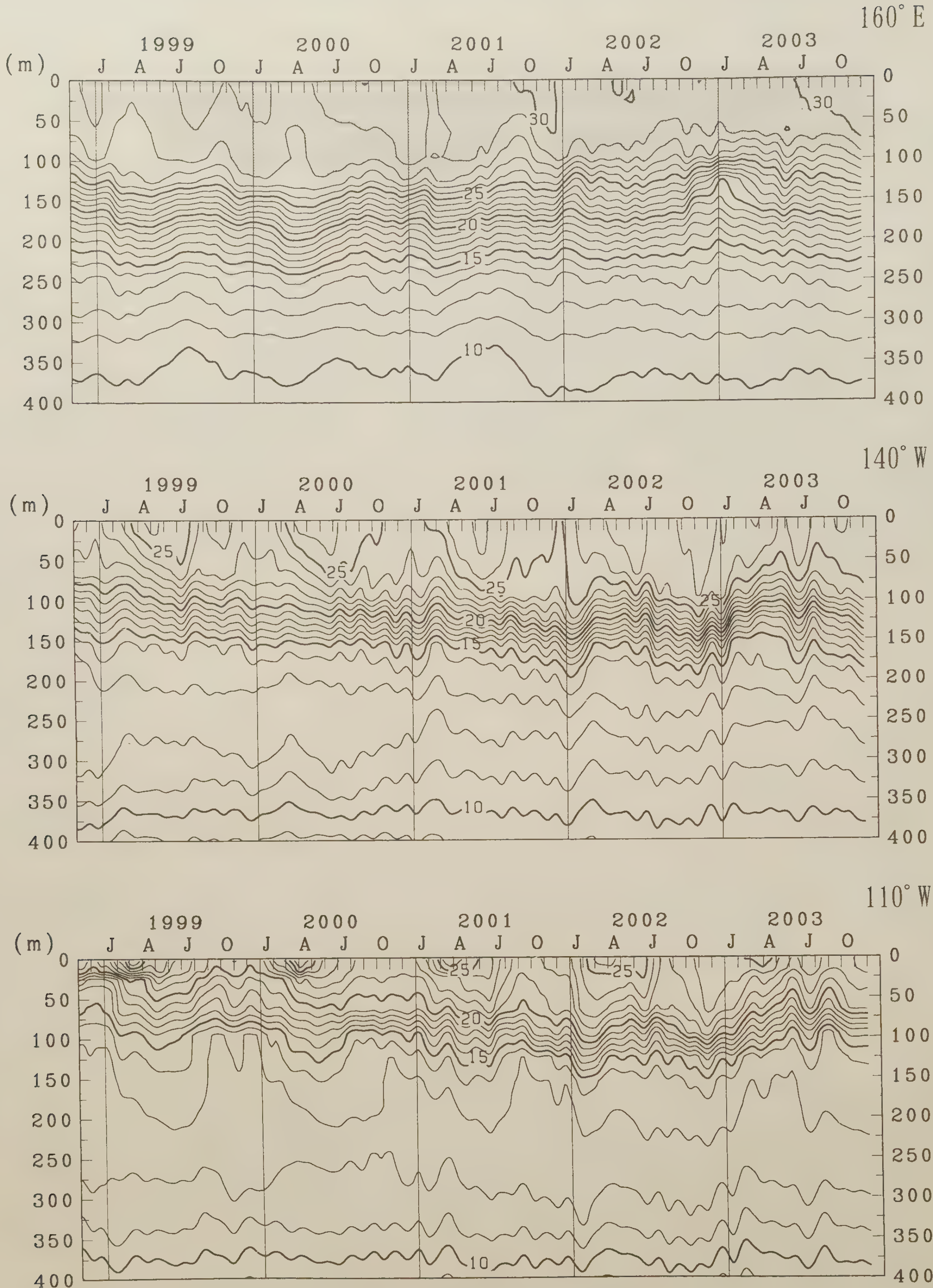
Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 ˚N-2 ˚S) in the global ocean. Contour interval is 1 ˚C (left) and 0.5 ˚C (right). Values greater than 28 ˚C (+0.5 ˚C) are shaded and values less than 23 ˚C (-0.5 ˚C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.



第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28　Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C (+0.5°C) are shaded and values less than 16°C (−0.5°C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2002 base period means.

Time-depth Sections of Equatorial Subsurface Temperature



第29図　太平洋赤道域の表層水温の時間－深度断面図

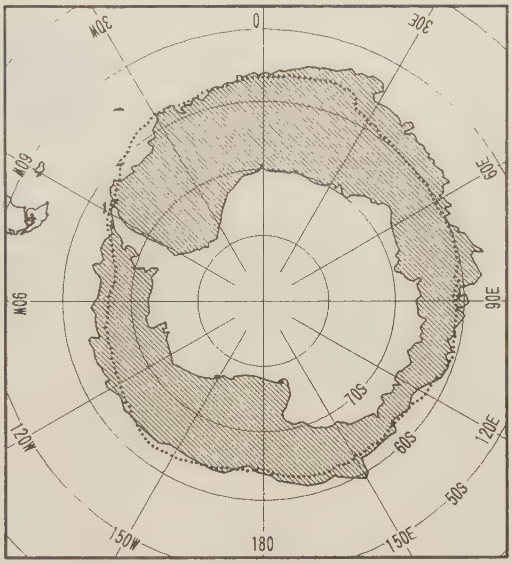
（上：西部、中：中部、下：東部）

Fig. 29 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160° E), the central Pacific (middle, 140° W) and the eastern Pacific (bottom, 110° W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1° C. Values greater than 28° C are shaded.



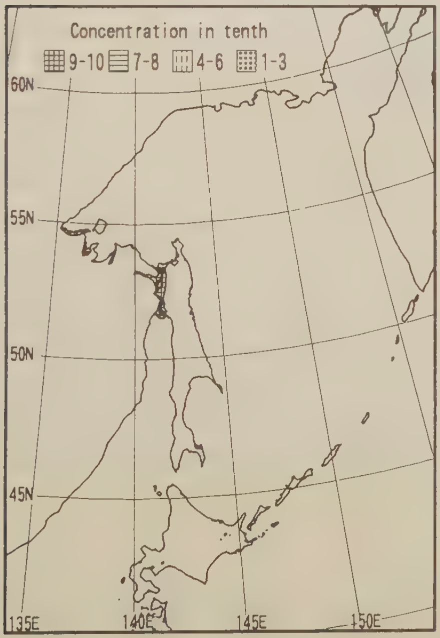
第30-1図　北極域の海氷図（2003年11月12日）

Fig.30-1 Sea ice chart in the Arctic on 12 Nov. 2003.
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.
The data source is the National Ice Center (USA).



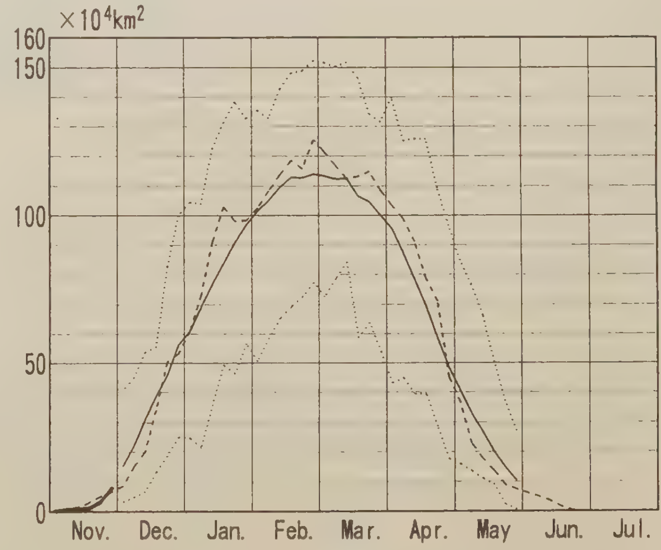
第30-2図　南極域の海氷図（2003年11月12日）

Fig.30-2 Sea ice chart in the Antarctic on 12 Nov. 2003.
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.
The data source is the National Ice Center (USA).



第30-3図 オホーツク海の海氷図（2003年11月15日）

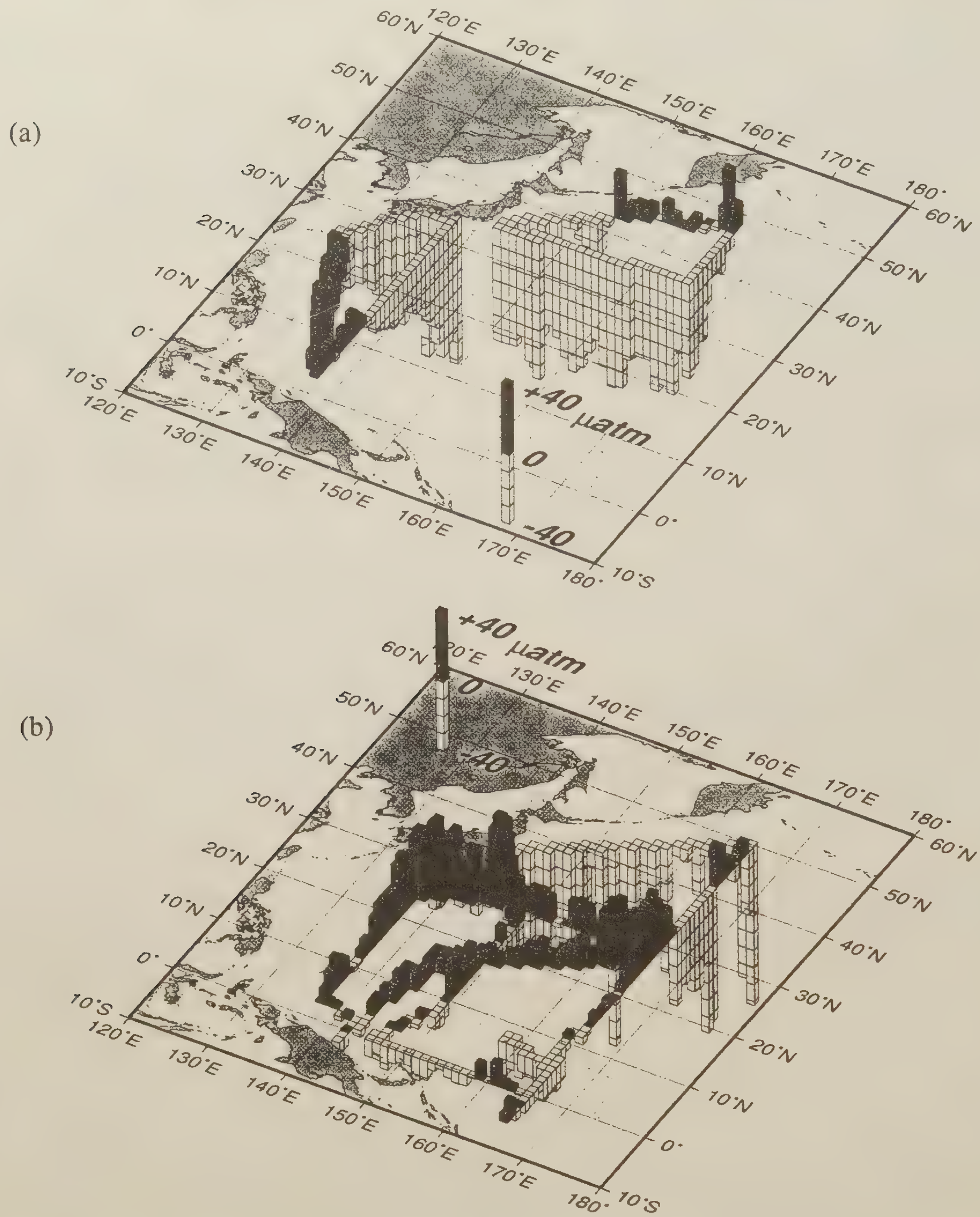
Fig.30-3 Sea ice chart in the Sea of Okhotsk on 15 Nov. 2003.



第30-4図 オホーツク海の海氷域面積

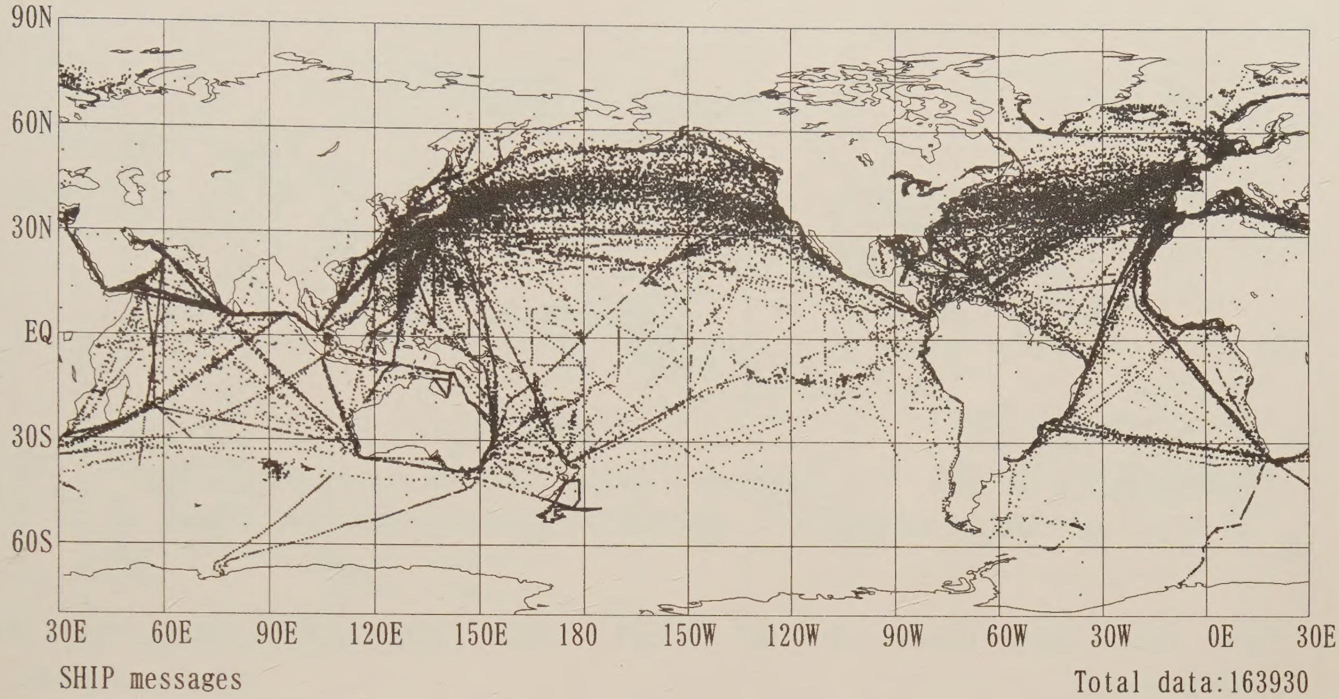
Fig.30-4 Time series of 5-day sea ice area in the Sea of Okhotsk.

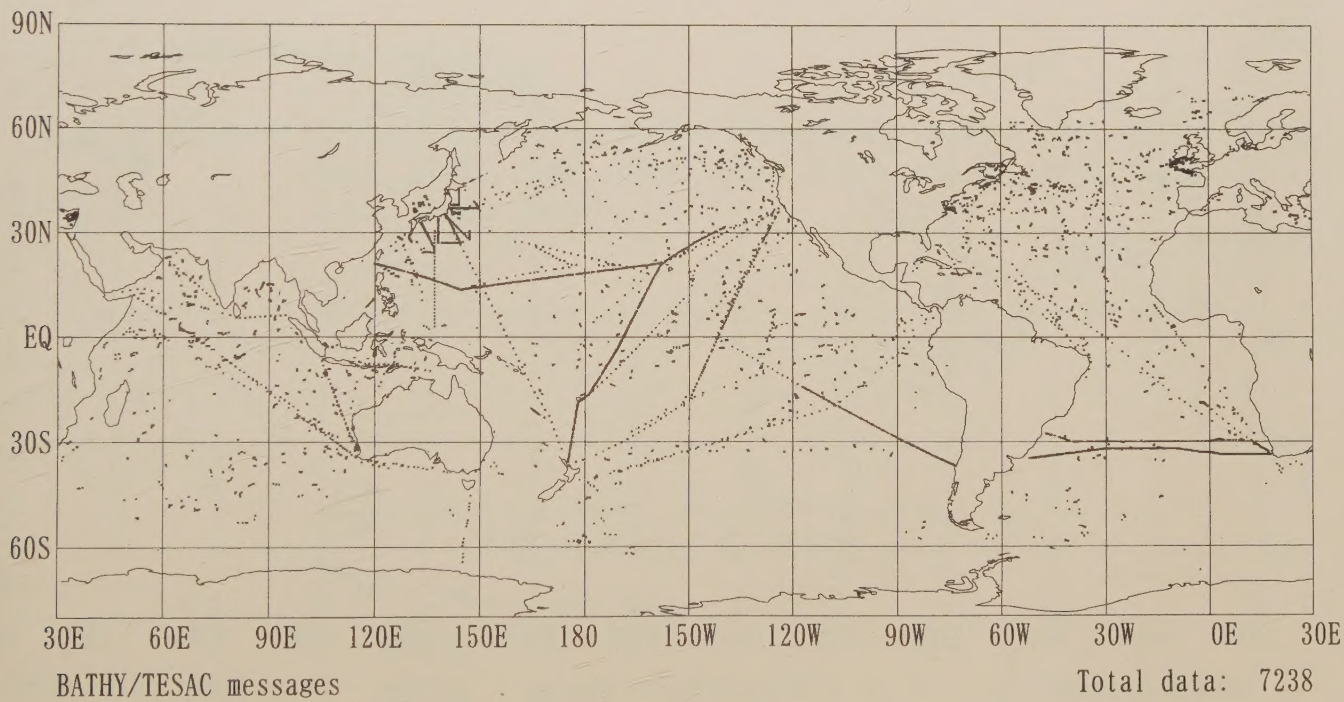
: current season (2003/2004)
: mean extent (1971–2000)
: maximum or minimum extent (1971–2003)
: last season (2002/2003)



第31図　気象庁「凌風丸」及び神戸海洋気象台「啓風丸」が、(a)2003年4月22日から5月18日にかけてと、(b)2003年6月21日から8月20日にかけて北西太平洋で観測した洋上大気中と表面海水中とのCO_2の濃度差。棒グラフは、海洋から大気へCO_2を放出する場合を濃い陰影、海洋が大気のCO_2を吸収する場合を薄い陰影に示してある。

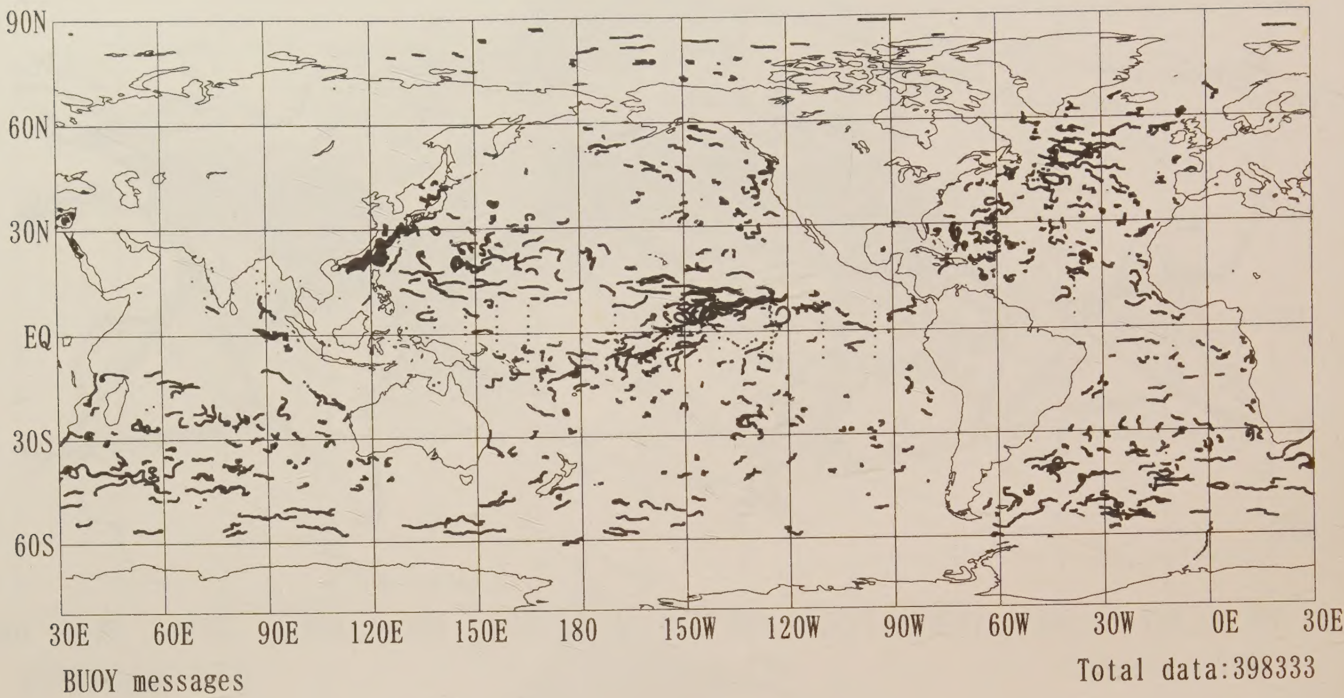
Fig. 31　Difference in the CO_2 concentration between the surface water and the overlying atmosphere in the western North Pacific observed by the R/V Ryofu Maru of the JMA and the R/V Keifu Maru of the Kobe Marine Observatory, (a) from April 22 to May 18, 2003 and (b) from June 21 to August 20, 2003. Darker-shaded upward pillars indicate that the oceanic CO_2 was emitted into the atmosphere, and lighter-shaded downward pillars indicate that the atmospheric CO_2 was absorbed into the ocean, respectively.

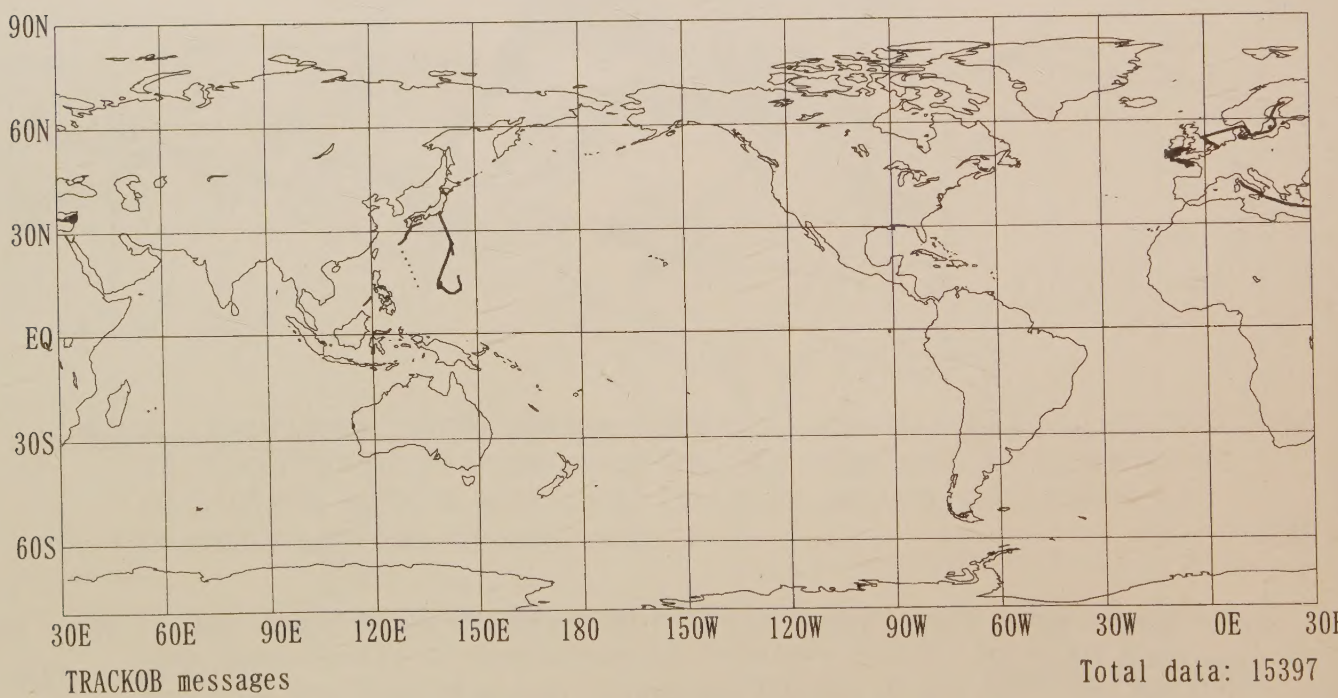




第32-1図　測点分布図(2003年11月)

Fig. 32-1 Geographical distribution of SHIP messages (top) and BATHY/TESAC messages (bottom) for November 2003.





第32-2図　測点分布図(2003年11月)

Fig. 32-2 Geographical distribution of BUOY messages (top) and TRACKOB messages (bottom) for November 2003.

気　象　庁　海　洋　月　報

Monthly Ocean Report

November 2003 (No. 131)

本月報掲載の2003年11月のプロダクトには、気象庁が観測したデータ及びGTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

東北大学、東京大学、鹿児島大学

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（順不同）

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